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NEW GENERA AND SPECIES OF
NEUROPTEROID INSECTS

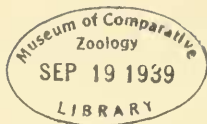
BY NATHAN BANKS

WITH NINE PLATES

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No. 7.—*New Genera and Species of Neuropteroid Insects*

BY NATHAN BANKS

The following pages contain descriptions of various new Neuropteroid insects that have come to the Museum in recent years. They are from various sources, but all from the Old World. Altogether there are descriptions of seventy-five new species and ten new genera, and redescriptions of a few old species.

PSOCIDAE

CAECILIUS MOROSUS spec. nov.

Head and thorax dark brown to black, shining, sometimes a small pale spot each side of ocelli; antennae black, densely short-haired, palpi white; eyes of male about a diameter apart; abdomen brown; legs whitish, tarsi darker, at least on tip.

In the female, with a broad dark streak from base to tip, leaving most of space behind medius clear, and also much above radial sector pale; the stigma not yellowish, but whitish, with a dark mark along middle of hind part connecting to dark streak; in the male the dark streak usually spreads over the entire wing, sometimes a little pale each side, stigma infusate, but darker behind; veins mostly brown.

Hind wing fumose, veins dark, in some females the outer costal part is paler than elsewhere.

The stigma is slender, broadly rounded behind, widest a little beyond middle; forks of radial sector much shorter than the pedicel; union of radial sector and medius as long as base of radial sector (in females), in males often shorter; areola postica small, like *C. muggenburgi*.

Length 4.5 mm.

From Rocky Scrub, McIlwraith Range, Cape York, Queensland, Australia, 23–29 June (Darlington) Type M.C.Z. no. 21774.

It is in the group of *C. muggenburgi*; head shaped much as in that species, the same strong V-like emargination to vertex, the nasus perhaps not as swollen. The shining black head and thorax, black antennae, and shape of stigma will separate it.

CAECILIUS FLAVICOSTA spec. nov.

(Fig. 21)

Head pale fulvous, with short appressed hair; antennae pale, also with short hair; thorax yellowish above, brown on each side in front

of wings, clothed with very short hair; abdomen and legs pale. Fore wings yellow along front, the costa and subcosta and stigma all clear yellow, also behind the second anal and the hind marginal vein are clear yellow, between is a broad brown streak from base to tip leaving three clear spaces in front and several behind between the ends of veins, the areola postica all pale, between anal veins are two dark spots and an almost white spot between. The middle dark streak has an extension to the stigma and along each of the outer veins, and occupying most of the marginal cells. Hind wings faintly fumose, outer costal part clear. The fore wing has a long stigma, not quite angulate behind; the forks of radial sector rather shorter than pedicel, the union of medius and radial sector is very short; the areola postica is semicircular and rather small.

Length 2.5 mm.

From Lankelly Creek, McIlwraith Range, Cape York, Queensland, Australia 7 June (Darlington). Type M.C.Z. no. 21773. *C. marcidus* of the Philippines has the costa and subcosta jet black to the stigma, and the dark streak is narrower than in *C. flavicosta*.

HEMICAECILIUS MEDIALIS spec. nov.

(Fig. 1)

Head whitish, with moderately long scattered hairs; eyes of male large, hardly their long diameter apart; ocelli very close together; antennae pale, with many long hairs; thorax pale, with a few long hairs; abdomen dark above and below toward tip; legs pale, unmarked.

Wings hyaline, veins pale, except in fore wing the radial sector beyond separation from medius is dark brown, and here there is a brown streak through the middle of the apical half of wing, somewhat widened at tip, but nowhere reaching to the medius. Veins sparsely long haired, on front margin the hair dense and short, on posterior margin longer and fewer hairs.

Fore wing moderately long and slender; stigma very slender, broadly rounded behind; areola postica moderately high, about two and a half times as long as high, almost evenly rounded above; forks of radial sector as long as pedicel, union of radial sector and medius fully equal to base of radial sector.

Length 3.2 mm.

From National Park, McPherson Range, Queensland, Australia, 13 March 3-4000 ft. (Darlington). Type M.C.Z. no. 21771.

ZELANDOPSOCUS SINUOSUS spec. nov.

(Fig. 12)

Head black, with some short hairs and much longer erect bristles, head of female wide across top, eyes small, three (or more) diameters apart; antennae yellowish brown, with many very long whorled hairs; thorax black, also hairy and bristly; abdomen dark; legs pale, tips of tarsi dark.

Wings hyaline, veins brownish; stigma dark along posterior and outer part, very hairy; a dark spot at nodus. Stigma elongate, broadly rounded behind; radial sector beyond separation extremely sinuous, the forks about as long as pedicel; medius much curved; areola postica high, sloping on outer side, union of radial sector and medius very short; hairs on veins of fore wing extremely long, in some cases as long as the adjoining cell, and placed in two rows so that the veins appear knotted.

Length 3.8 mm.

From Mt. Lofty Range, South Australia, August (Darlington). Type M.C.Z. no. 21772.

In one wing there is a short spur of a vein from each side of the bend of the radial sector, and also from one side near the top of the areola postica; in the other wing these spurs are complete to form two cells. This is hardly a true *Zelandopsocus*, but the venation is too sinuous for *Philotarsus*; except for the markings it is similar to a specimen of *Z. formosellus* Tillyard.

PERLIDAE

PARAGNETINA INSIGNIS spec. nov.

(Fig. 79)

Body black above and below; head with a broad, transverse, reddish spot covering the ocellar region, and sometimes reaching to the eyes, and usually including the lateral tubercles; antennae, palpi, legs, cerci dark brown to almost black; wings dark brown, veins nearly black, in some specimens there are pale areas in the middle of many cells behind the radial sector over the rest of the wing, in both wings.

Ocelli large, as near to eyes as to each other; lateral tubercles oblique, the outer end being close to the eye; pronotum one and one half times

as broad as long, a little narrowed behind, the anterior angles sharp, disc not very rugose. In the fore wings about five or six cross-veins beyond subcosta, usually three branches to the radial sector beyond the anastomosis; cross-vein from radius to sector very oblique and continued so in base of the branch; second anal vein very sinuous.

In the hind wing the stalk of the median cell longer than width of the cell, second anal vein with four or five branches, in one specimen with several cross-veins. In male with fifth dorsal segment extended behind, broadly rounded, on seventh tergite a broad median black area, margined laterally and posteriorly, and divided behind; on eighth tergite a similar broad, median black area, and this is minutely granular; the processes are high, the basal part broad, the apical part moderately elongate, and within is a large pad or button.

Length of fore wing 25 to 27 mm.

Several males, all taken at Pingloo, Kwangsi, China in May 1933 by Gaines Lui. Type M.C.Z. no. 23421. Related to *P. pيلي* but the apical part of the processes is longer, the fifth segment extended back farther, and the areas on seventh and eighth segments different. It is very much darker, and in *P. pيلي* the head is much paler, with the ocellar area dark.

TOGOPERLA SINENSIS spec. nov.

(Figs. 75, 81)

In general similar to *T. perpicta*. The ocellar area is black, but less black in front of ocelli than in *perpicta*; antennae brown, often yellowish on basal part behind, basal joint and the palpi black. Pro- and mesonotum black, metanotum sometimes paler on sides. Legs with the black band at base and tip of femora and tibiae as in *perpicta*. Abdomen pale toward base, darker near tip; venter mostly pale, darker at tip, cerci pale yellow.

Wings brown (as in *perpicta*), costal area yellow, subcostal area generally darker than rest of wing (as in *tricolor*).

Head with ocelli and tubercles, and the pronotum as in *perpicta*. Venation also about same, in hind wings often two cross-veins (instead of the usual one).

Male genitalia have the fifth segment about as in *perpicta*, but behind this are only the normal short hairs, and the apical part of process is much shorter than in *perpicta*, and the buttons on inner side of processes are very large, pitted much like *T. valvulata*. In female the

large elongate ventral plate is truncate and very shallowly excavate at tip (not the deep notch of *perpicta* and *tricolor*).

Length of fore wing 22 to 25 mm.

Several specimens from Yim Na San, Kwantung, China, 11 to 16 June (Gressitt). Type M.C.Z. no. 23419.

TOGOPERLA KLAPALEKI spec. nov.

(Fig. 76)

Similar in appearance and structure to *perpicta* and *sinensis*. The legs with the basal and apical black bands on femora and tibiae as in those species. The head, however, has a broad yellow stripe between the eyes and the central dark mark; pronotum and most of meso- and metanotum black; abdomen more brownish than allied species; cerci pale yellow. Wings hardly as dark brown as the other species, costal area yellow.

Venation about the same, both specimens have three cross-veins instead of one) in branches of anal in one hind wing. The ventral plate of female, instead of being convex on sides, is plainly concave, and much narrowed to the tip, where it is deeply notched.

Length of fore wing 27 to 31 mm.

Two females from Yim Na San, Kwantung, China, 11 and 14 June (Gressitt). Type M.C.Z. no. 23420.

The three species of *Togoperla* from southern China, all marked the same on wings, legs, and body, can be separated as follows:

Males

1. Long hair in middle behind tip of the fifth dorsal segment; apical part of the processes long *perpicta*
Only short hair behind the fifth segment; apical part of processes much shorter *sinensis*

Females

1. Ventral plate with the sides concave, much narrowed to notched tip *klapaleki*
Ventral plate with convex sides 2
2. Ventral plate with apical notch *perpicta*
Ventral plate slightly, broadly emarginate *sinensis*

Key to the Genera of Oriental Neoperlinae¹

1. Third joint of maxillary palpi straight; head very broad behind; lateral tubercles placed high, the upper edge always higher than the lower edge of ocelli, latter about two or more diameters apart; in hind wings the median cell is usually longer than the pedicel 2
 Third joint of maxillary palpi more or less curved, usually much so near the base; head not especially broad behind; lateral tubercles usually placed below the lower edge of ocelli; in hind wings the median cell is usually as short or shorter than its pedicel 4
2. Males with the seventh ventral segment with a rounded elevated area, densely hairy, female with an extremely large ventral plate, covering the next segment *Etrocorema*
 Male and female not as above 3
3. Male appendages simple, no spine at inner tip *Tetropina*
 Male appendages with a long spine at tip of each *Neoperlops*
4. Cubital fork short, ending much before the end of the cubito-median cell; lateral tubercles situate low, near the lower end of the eye . . . *Phanoperla*
 Cubital fork running out about to end of the cubito-median cell; lateral tubercles usually higher up 5
5. Head long, space from ocelli to front margin equal to width between eyes; eyes elongate, but little arched; ocelli small, about two diameters apart, and twice as far from the eyes *Oodeia*
 Head not so elongate 6
6. Eyes scarcely arched; ocelli about three diameters apart, much further from the eyes; head and thorax, and usually wings, almost black . *Ochthopetina*
 Eyes well arched and prominent, ocelli usually closer to each other and larger; rarely more than partly black *Neoperla*

NEOPERLOPS gen. nov.

In general resembling *Neoperla*, but the head is broader behind; the lateral tubercles elongate and placed about as high as the ocelli; the third joint of the maxillary palpi is straight (instead of curved or twisted in *Neoperla*). In the hind wings the median cell is usually longer than its stem; all the species are large.

Type *gressitti* spec. nov.

Neoperla angulata Walker from Ceylon probably also belongs to this group, the specimens that Hagen so identified will go here. The

¹*Macroplox* is the same as *Etrocorema*, and *Javanita* and *Formosita* I consider as synonyms of *Ochthopetina*.

lateral tubercles are, however, more oblique. The male genitalia are similar to *N. gressitti*, but the seventh tergite is somewhat prolonged behind, and on the eighth is a median ridge, the basal part of the processes is shorter and broader than in *gressitti*, but the apical spine is fully as long. There is no projecting ventral plate in the female.

NEOPERLOPS GRESSITTI spec. nov.

(Figs. 78, 82, 84)

Head pale, a triangular brown mark in the ocellar area, and a smaller one in middle near lower margin; palpi brown; basal and one or two other joints of antennae pale, beyond brown; ocelli from one and a half to fully two diameters apart; lateral tubercles almost longitudinal, more than three times as long as broad and quite close to ocelli. Pronotum pale, more or less brown in disc and darkest at median groove, broader than long, and plainly narrowed behind, rest of thorax pale, but often dark on the mesothoracic humps. Abdomen pale on basal part, dark toward tip in female; cerci pale; venter partly brownish in female, in male yellow; sternum yellowish; legs pale yellowish, tips of femora and tibiae black in male, in female all tibiae are more or less brown, especially above.

Wings faintly yellowish hyaline, veins brown, but costal area, and often the radius, yellow; six or seven cross-veins beyond the subcosta; radial sector arises well toward base, two branches beyond the anastomosis. In hind wing the median cell is usually longer than the stem, usually one or two cross-veins among anals.

In the male there is a patch of spicules on the seventh tergite near tip, which is here a little produced backward, also spicules at base of the eighth on each side of the notch; processes are slender, and each with a long slender spine at tip.

In the female the ventral plate is indicated by a small median lobe, with a notch each side of it.

Length of fore wings, ♂ 23 to 26 mm., ♀ 31 to 32 mm.

Two pairs from Yim Na San, Kwantung, China, 11 to 12 June, and Hong San, Kiangsi, 22 to 26 June (Gressitt coll.). Type M.C.Z. no. 23422.

NEOPERLOPS OBSCURIPENNIS spec. nov.

(Fig. 83)

Head dull yellowish, a large dark mark in ocellar area and reaching broadly forward; palpi brown; basal joints of antennae pale, beyond

brown; ocelli (♀) full three diameters apart, but somewhat farther from the eyes; lateral tubercles situate as in *N. gressitti*, and of same shape. Pronotum brown, broader than long, narrowed behind; rest of notum dark in middle, paler on sides; abdomen yellowish brown on basal part, brown toward tip; cerci brown; sternum yellowish; venter yellowish on basal part, beyond brown. Legs mostly brown, sometimes darker at tips of femora and tibiae, femora usually dull yellow on sides, and the hind femora on the basal half above.

Wings evenly pale brown, the costal area not paler, veins darker brown; venation much as in *N. gressitti*, but usually three branches to radial sector beyond the anastomosis. The ventral plate is indicated by a swollen, elliptical dark area on the middle of the hind margin of the seventh segment.

Length of fore wing, 22 to 25 mm.

Four females from Yim Na San, Kwantung, China, 12 to 16 June (Gressitt). Type M.C.Z. no. 23423.

NEOPERLA PARVA spec. nov.

(Fig. 29)

Pale brownish, basal two thirds of abdomen more yellow; antennae (except base) brown; legs and cerci pale, tarsi darker. Fore wings faintly gray, veins brownish, costa, subcosta, and radius less distinctly; hind wings hyaline, with pale veins. Head moderately broad; eyes (from side) a little longer than high; ocelli moderately large, about one and a half diameters apart in male, in female about two diameters apart, in both nearly twice as far from the eyes; lateral boss oblique, about midway from eye to ocellus, or rather nearer latter.

Pronotum once and a third broader than long, but little narrowed behind, middle area rather narrow, sculpture moderately coarse.

Fore wings with about ten costals, two beyond end of the subcosta, radial sector usually with but one branch, usually but two or three (rarely four or five) median, and two or three cubital cross-veins; in hind wings the radial sector has but one branch, and the discal cell is about as long as its pedicel.

Male genitalia show from seventh segment a slight median projection followed across eighth by a median carina, ninth with a curved transverse raised streak each side and inner ends with some small spine-like hairs; anterior process long, slender and straight, lower process broad, short and rounded.

Length of fore wing 9 to 10 mm.

From Telang, Oct.; and Baram River, Sept., Borneo. Type M.C.Z. no. 22692

NEOPERLA MOESTA spec. nov.

(Fig. 30)

Head yellow brown to reddish brown; ocelli on black spot; antennae and palpi dark; pronotum brown or faintly reddish brown, usually darker on sides; abdomen pale, scarcely darker at tip; legs brown or yellowish brown, darkest on upper side of tibiae, tarsi dark, no distinct mark under knees; both wings evenly pale brown, except the costal area is faintly yellowish, but costa, subcosta, and radius are brown, as also the costal cross-veins, other veins also brown. Head moderately broad; ocelli nearly two diameters apart, fully as far from the eyes, lateral boss is transverse and nearer to eyes than to ocellus. Pronotum nearly twice as broad as long, much narrowed behind, front rounded, anterior corners about square, median area rather narrow, sculpture fairly coarse. In fore wings eight or nine costals, two beyond end of subcosta; radial sector usually two-branched, first from near anastomosis; six or seven median and five or six cubital cross-veins. In hind wings the radial sector is two-branched, and the discal cell a little longer than pedicel.

The male has a rather broad triangular process from the seventh segment, the tip rounded and with teeth below; on eighth segment there is a laterally delimited area, with the broad tip extending a little beyond the margin, there is a carina or row of teeth along the middle; the inner ends of the ninth segment are very plainly roughened; the anterior process is slender, slightly curved, but not sharp pointed, the lower process a broad lobe.

Fore wing 11 to 13 mm. long.

From Shimoga, Mysore, India, August (P. Susai Nathan coll.). Type M.C.Z. no. 22695.

What Klapalek calls *N. limosa* Hagen is somewhat similar, but the process of seventh segment is more slender and longer, and the ocelli are said to be nearer to eyes. Hagen's *N. limosa* is closely related to *N. minutissima* Endl., with similar genitalia. This species in some ways agrees with *N. tristis* Navas, but I have identified as *N. tristis* a smaller species, with paler wings, and the costal area plainly yellowish. This also has the ocelli much nearer to each other than to the eyes, and

the process from the seventh segment is very long, but more slender than Klapalek's figure for his *N. limosa*. Needham's figure of *N. indica* will fit none of these forms.

NEOPERLA (OODEIA?) CENTRALIS spec. nov.

(Fig. 32)

Pale yellowish, head slightly darker in middle, pronotum with a median dark stripe, which extends back on the mesonotum. Fore wings pale, costa, subcosta, and radius pale yellowish, also the costal cross-veins, radial sector, medius, and cubitus, the anastomosis and cross-veins brown, and sometimes slightly bordered with brown; hind wings pale, with pale veins. Antennae, palpi, legs, cerci all pale, but tarsi somewhat brown.

Head rather narrow and long; eyes (from side) much longer than high; ocelli moderately large, hardly one diameter apart, more than twice as far from the eyes; lateral boss rounded, smaller than ocellus, situate near beginning of lateral ridge, and thus much nearer to eye than to ocellus.

Pronotum about once and a half as broad as long, hardly narrowed behind, middle area moderately broad, sculpture rather coarse.

Fore wings with about fourteen costals, two or three beyond end of subcosta, cross-vein from radius to radial sector much before fork, radial sector with three branches, about seven median and five cubital cross-veins; in hind wings the discal cell about as long as its pedicel; radial sector with three branches.

In male the eighth segment shows a rather long, almost pointed triangular median projection; the anterior process is slender and pointed, almost evenly curved, the lower process is shorter, stouter and somewhat curved, the ninth segment has a small spot of short, stout bristles.

Fore wings 12 mm. long.

From Mt. Murud, Borneo, 23 Feb. (Mjöberg). Type M.C.Z. no. 22694.

The narrow head and elongate eyes place this near *Oodeia*. A female from North Borneo is larger, but marked the same, but the lateral boss is elliptical and fully as near ocellus as to eyes. Of the three *Neoperla* described by Navas in 1929 from Borneo, *N. nangina* by the head marks, shape of pronotum, and few costals is plainly *Tetropina larvata*. Both the others have ocelli wider apart than in the above species, and *T. lebangina* seems to agree quite well with *N. variegata* Klap.

OODEIA KLAPALEKI spec. nov.

(Fig. 103)

In general very similar to the Malayan *O. dolichoptera*. Head pale, with the same black triangles, one over the ocelli with point forward, other on front margin with point upward, the points often meeting; ocelli larger than in *dolichoptera*, and scarcely more than their diameter apart; lateral tubercles transverse, much nearer ocellus than eye; pronotum about as in the other species, brown, narrowed behind, anterior corners prominent, and the two median ridges are distinctly separate throughout; rest of thorax and the abdomen yellowish; legs yellowish, the tibiae usually dark at base and more or less darkened above; cerci pale, darker toward tips.

Fore wings slightly infuscate, veins brown, but the costal area and veins pale yellowish; one or two cross-veins beyond the end of subcosta; radial sector with two or three branches beyond the anastomosis; in hind wing the median cell is about as long as the pedicel, and there are one or two cross-veins among the anals. The ventral plate of the female is only slightly swollen in the middle and with a moderately deep subtriangular emargination, which is much narrower than that of *dolichoptera*.

Length of fore wings 15 to 17 mm.

A number of females from Yim Na San, Kwantung, China, 11 to 17 June (Gressitt). Type M.C.Z. no. 23425.

OCHTHOPETINA NIGRIFRONS spec. nov.

(Fig. 73)

Head and pronotum black, sometimes the lower part of face paler, mesonotum dark, metanotum and abdomen yellow; legs pale on most of femora, tibia and tarsi dark; antennae pale on basal third, beyond dark, palpi dark, cerci pale. Wings evenly dark brown, veins darker, but costal area and the veins there yellowish, a whitish hyaline line in front of the median vein along the middle part of wing, in the hind wing this streak is nearer the radial sector and partly on the lower side of the discal cell.

Head rather broad; ocelli small, fully three diameters apart and not as near eyes as to each other, lateral boss small, rounded and not far from the beginning of the lateral face ridge, thus fully twice as near

to eye as to ocellus; pronotum broad, fully twice as broad in front as long, much narrowed behind, front rounded, anterior corners about square, median area very broad, sculpture not very coarse.

Fore wings with the subcosta very short, not nearly reaching to anastomosis, only one to three costal cross-veins, and beyond subcosta one or two; the anastomosis more basally placed than usual, so that the apical area is longer than normal, radial sector with one branch, five or six median and cubital cross-veins, cubital fork arises only a little before the first cubito-median cross-vein, but at an acute angle, and is as long as usual. In hind wing the radial sector with one or two branches, and the discal cell much shorter than its pedicel.

The male genitalia have the anterior process small, slender, and pointed, not as long as usual, the ninth segment has a small roughened area at inner ends, the seventh has a median lobe, broad, but very short.

Length of fore wing 8 to 10 mm.

From Ta Han, 23 June, Liamui, 2 Aug., and Dome Mt., 13 July, Hainan Island. Type M.C.Z. no. 22693.

PHANOPERLA NERVOSA spec. nov.

(Fig. 25)

Head and thorax brownish yellow; abdomen paler yellowish; antennae, palpi, legs, and cerci pale; tips of tarsi and cerci darker. Fore wings pale; costa, subcosta, and radius pale, other veins mostly brown, and many of them margined more or less distinctly with brown, especially at anastomosis and the median and cubital cross-veins; hind wings pale and with pale veins.

Head moderately narrow; ocelli rather small and close together, scarcely more than diameter apart, fully twice as far from the eyes. Lateral boss small, rounded and much nearer to lower eye than to ocellus. Pronotum nearly twice as broad as long, front convex, median groove very distinct and dark.

Fore wings with twelve to fourteen costals, two beyond end of subcosta, radial sector usually with three branches beyond anastomosis, four or five median cross-veins, and two from cubitus to sector, and two beyond end of cubital fork.

In hind wings two or three branches to radial sector, discal cell almost as long as its pedicel and its front margin plainly concave.

In male the forked processes are ivory white, and both branches

very broad and heavy, the lower one very short, the upper twice as long and almost pointed; inner margins of ninth segment roughened with many small teeth.

Fore wings 11 to 12 mm. long.

From Sarawak, Borneo. Type M.C.Z. no. 22690.

It differs from *P. hageni* (Neoperla) in having the tips of the processes longer and acute; *P. hageni* shown in Fig. 28.

DYAPERLA gen. nov.

A Neoperla with three ocelli, the anterior one very small, but distinct and forming with the others a long isosceles triangle. Venation as in Phanoperla, the cubital fork short, and arising in a broad curve from near the first cubito-median cross-vein; lateral boss small and as far forward as in some Phanoperla; eyes not very large, and (from side) a little longer than high; in hind wings the discal cell is short. The male genitalia on the plan of Neoperla.

DYAPERLA ANOMALA spec. nov.

(Figs. 24, 26.)

Pale yellowish, also the appendages and wings, only extreme tips of tarsi darker, pronotum scarcely brownish, each ocellus surrounded by a black ring.

Head only moderately long, posterior ocelli as far from hind margin as in Phanoperla, small, fully two diameters apart, and much farther from eyes; anterior ocellus small, and nearly twice as far forward as the hind ocelli are apart; lateral boss down near the lateral face ridge. Pronotum about once and a third as broad as long, not much narrowed behind, anterior corners rounded, median smooth area very broad, lateral sculpture fairly coarse. Fore wings with eight or ten costals, one or two beyond end of subcosta, radial sector with one fork, rather far beyond anastomosis; five or six median cross-veins, two cubital cross-veins to cubital fork, and two or three beyond. In hind wings the discal cell is hardly one-half as long as its pedicel, about six cubital cross-veins, radial sector with one branch.

Male genitalia with no median projection on dorsal segments, the inner part of ninth broadly roughened by numerous erect brown tubercles, many of them in rows; the anterior process is fairly long,

pointed at tip, the lower short and rounded, the base of the processes extends toward each side, but is narrow throughout.

Length of fore wing ♂ 10.2 mm.; ♀ 12 mm.

From Mt. Dulit, Borneo, 3000 ft. (Mjoberg). Type M.C.Z. no. 22691.

Key to the Genera of Oriental Acroneurinae

1. Ocelli two 2
 Ocelli three 5
2. An extra cross-vein (or two) between the first and second anal veins in the fore-wings *Atoperla*
 No such extra vein 3
3. Pronotum quadrangular, ninth sternite with a triangular corneous piece at tip; ocelli often as near or nearer to eyes than to each other . . . *Gibosia*
 Pronotum somewhat six-sided, the lateral margin not bent down, ninth sternite with an elliptic button, ocelli much nearer to each other than to the eyes 4
4. Head back of eyes prolonged for a greater distance than length of eye, thus head longer than broad; metasternum with nearly parallel sutures *Schistoperla*
 Head not prolonged back of eye nearly the length of an eye, thus head broader than long *Kiotina*
5. Pronotum six-sided, the lateral margin not bent downward . . *Nipponiella*
 Pronotum quadrangular, the side margins bent down as usual 6
6. The male processes arise from above the cerci *Claassenia*
 The male processes arise from between the cerci *Acroneuria*

ATOPERLA CHIANGI spec. nov.

(Figs. 80, 85)

Head black around ocelli, in front paler, the tubercles pale; palpi and antennae brown, basal joint of latter black; ocelli about as near eyes as to each other; lateral tubercles large, about as near eyes as to ocelli.

Pronotum dark brown, shining, very rugose, much broader than long, anterior angles sharp, hind corners rounded, only a little narrower behind than in front; meso- and metanotum largely dark, but pale on sides; abdomen yellowish brown, darker at tip; cerci black; sternum yellowish, venter rather darker and much darker at tip; legs pale yellowish on fully basal half of femora, beyond black to tip of tarsi.

Wings evenly pale brown, veins darker, costa! area yellow. In fore

wings radial sector arises well toward base, two branches beyond anastomosis, two cross-veins between first and second anals, three to four cross-veins beyond end of subcosta. In hind wings the median cell more than twice as long as its pedicel, about six cubital cross-veins; no cross-veins connecting anals.

The last ventral segment of the male shows a nearly circular button about its diameter from the hind margin; the processes are short and sharp-pointed, thorn-like, and wide apart.

Length of fore wing 13 to 14 mm.

Two males from Yim Na San, Kwantung, China, 14 June (Gressitt coll.).

Differs from the two other Chinese species in the shape of the genital processes, as well as in venational points and in color, especially color of legs. Type M.C.Z. no. 23424.

KIOTINA RESPLENDENS spec. nov.

(Figs. 74, 77)

Deep black throughout and in many places iridescent, fore wings with violaceous reflections, the hind wings, seen from in front, are purplish; head shining, short and broad, with the two ocelli close to pronotum, these small about four diameters apart, and fully twice as far from the small and short eyes; lateral tubercles also close to pronotum, transverse, between the ocelli and eyes.

Pronotum nearly twice as broad as long, broadest behind middle, the lateral margins not depressed, so somewhat six-sided, a broad middle field, and the sides with strong rugae.

Fore-wings with a cross-vein between radius and radial sector near tip; radial sector with three or four branches beyond the anastomosis; often six cross-veins beyond end of subcosta; in hind wings the median cell is extremely long, the pedicel scarcely more than width of cell; second anal with various branches, and one or two cross-veins. In the female the ventral plate is large and broad, more than covering the next segment, its hind margin scarcely emarginate. In the male the ninth sternite shows a transverse, pale, nearly elliptical button, almost as near to base as to hind margin of the segment; the processes are fairly large, broad at base, and with a slender, straight tip, apparently continued on the outer margin.

Length of fore wing, ♂ 18 mm., ♀ 20 mm.

A male from Hong San, Kiansi, China, 26 June, and a female from

Yim Na San, Kwantung, 15 June, (both Gressitt coll.). Type M.C.Z. no. 23426 Related to *K. suzuki* Oko. from Japan, but that species is not so dark, nor iridescent, and the ventral plate is different.

Klapalek has recorded *K. violaris* Enderl. from Tonkin. I have a paratype of *violaris* from Java; the eighth ventral segment is simply broadly rounded, not a large plate like *resplendens*, the basal part of all femora is pale yellowish, the antennae pale on basal part, the head is not as broad as in *resplendens*, the pronotum longer.

MYRMELEONIDAE

MOSSEGA Navas

This genus has been based on venational characters that are variable; in one of my original specimens of *M. indecisa* there are no connecting veinlets in the costal area, and when present are often only a few. However, this species, with *G. osmyloides* and a new species, differs from *Glenoleon* in having more slender legs, the basal tarsal joint more elongate, in the very broad costal area (very much broader than radial space) and in that the radial sector arises long before the cubital fork, there being three to five cross-veins between the radial sector and the cubitus before the cubital fork. In all three the wings are very delicate, and the veins very slender.

MOSSEGA HYALINA spec. nov.

Face brown, extending up above the antennae, vertex pale, a dark line across front and a faint line behind, and between are some faint marks; palpi pale; antennae brownish yellow, darkest at tip.

Pronotum pale, with median dark streak, but in the extreme front, a median pale line, hairs on pronotum very long, lateral ones whitest, median ones black; meso- and metanotum mostly brownish, with some small pale marks, pleura pale, with dark spot, some forming a line just below base of wings; abdomen brown above, paler below on basal half and also last segment, hair white.

Legs pale, clothed with mostly white hair, some dark bristles, dotted with dark, more distinctly dark at ends of tibiae and tarsal joints, front tarsi mostly dark; last tarsal joint about equal to apical, spurs not longer than basal joint.

Wings hyaline, unmarked, stigma indistinct; veins pale, slightly

marked with dark at ends of cross-veins, the first cross-vein beyond stigma margined with brown, also some at and near rhexma, the forkings of marginal veins, and a few spots along cubitus and cubital fork dark.

Hind wings unmarked, except a few very small, dark dots at outer forkings.

In fore wing costal area is very broad as in allied species, between radial sector and cubitus five cross-veins before cubital fork, three cross-veins before radial sector, nine branches to radial sector (in both wings) venation very similar to *M. indecisa*, but no connecting veinlets in costal area; hind wing but little longer than fore wing.

Length fore wing 19.5 mm., width 6 mm.

“ hind wing 20 mm., width 4.5 mm.

From Coen, Cape York District, Queensland, Australia, May to June (Darlington). Type M.C.Z. 20243.

CUETA HUGELI var. INCIVA var. nov.

In general similar to typical form, but distinct by a rather broad, black, median stripe on the face from at or near interantennal mark down to the mouth; when connected to interantennal mark there is left a pale median spot. It is a little larger than typical form, with the body marked the same; the wings are heavily marked and the pale streak each side of the white banksian line is very distinct. The male appendages are moderately short as in *hugeli*, densely clothed with black bristles. There are usually several of the cross-veins in front of cubital fork that are crossed.

From Coimbatore, South India, Nov. to Dec., and 16 Sept. (P. Susai Nathan). Type M. C. Z. no. 23231.

I have *C. hugeli* from Vizagapatan, Madras Province, India (Frazer).

CUETA FACILE spec. nov.

Head pale yellowish, an interantennal spot, forked below, truncate above; vertex with narrow median brown stripe, and two spots each side, front one extending toward eye; last joint of labial palpi brown outside; antennae pale yellowish, not annulate, tip above rather brownish. Pronotum almost as long as broad, with narrow median black line, and three or four almost connected dots each side, some dark hairs in middle, five or six long, curved white hairs each side; on mesonotum

the median dark stripe is divided, sides with some dark spots and streaks; pleura with two dark stripes, hair long and white.

Abdomen with dark venter, dorsum pale, with a median black stripe and a dark streak on side of each segment, apical segment (♀) wholly pale and very short. Legs pale, dotted with dark on upper and outer sides, some black hair on femora and tibiae above, and many bristles black, but rest of hair and some bristles on front and mid legs white, a brown mark on front coxa; spurs on front and mid legs about two-thirds of basal joint, on hind legs little more than one-half, basal tarsal joint plainly shorter than the apical.

Wings moderately slender, tips nearly acute; venation pale, scarcely at all marked, except the main longitudinal veins are spotted, the radius wholly pale, the radial cross-vein before stigma, and two beyond are dark, a dark vein at rhexma and small dot at end of cubital fork, these in both wings dark, as also a dark mark at base of stigma in hind wings, and in fore wings the forks in apical half of wing and a row of gradates above and one below the banksian line are black.

In fore wing eleven or twelve cross-veins before radial sector, ten branches of sector, anal with seven or eight branches to margin.

In hind wing ten or eleven cross-veins before radial sector, ten branches to sector, and five or six branches from anal to margin.

Length of fore wing 27mm., width 6.8mm.; length of hind wing 24mm., width 5.5mm.

From Coimbatore, S. India, Nov. to Dec. (P. Susai Nathan). Type, M.C.Z. no. 23230.

GAMA IRENE spec. nov.

Of the general appearance of *G. mortifer*. Head pale, face unmarked, a dark band above antennae, sometimes with median pale spot, two black bands on vertex from eye to eye, behind the last are six dull black spots, two in middle close together, and two, well separated, each side; last joint of labial palpi partly dark, antennae brown, annulate with pale, basal joint pale, a dark spot in front. Pronotum dull black, with gray marks, a median line, and a broader stripe each side containing two dark spots; a few curved white hairs each side. Mesonotum dull black, with a pale, median stripe and some spots on sides; about opposite base of fore wings are two submedian transverse black spots; metanotum dark, a deep black, transverse mark each side near the middle; pleura dark above, pale below and with much long white hair. Legs spotted and banded with black, clothed with much white

hair, and some white and more black spines; spurs nearly equal to four joints.

Wings acute at tip, slightly concave on outer margin; veins pale, nearly white, much streaked with black, some veins wholly black and a few wholly pale, some outer cross-veins and forks margined with dark, a distinct dark spot at rhexema, streak or spot at end of anal, extending up to cubitus and back on anal; stigma brownish.

In hind wing venation less marked with black, a distinct dark spot at rhexema, stigma unmarked.

In fore wing are seven cross-veins before the radial fork, twelve branches to radial sector, thirteen branches of anal to margin, a cross vein from third anal to second. In hind wings twelve branches of radial sector, ten branches from anal vein to hind margin; the cubital fork is rather irregular. Poststigmatal crossveins in both wings.

Length of fore wing 28mm.; width 7mm.; length of hind wing 26mm.; width 5.5 mm.

From Darjeeling district, India (Frazer), and Shimoga, Mysore district, India, 27 May (P. Susai Nathan). Type M. C. Z. No. 23229.

FORMICALEON DISTINCTUS spec. nov.

Body pale yellowish, head with a brown inter-antennal mark extending a little below and above up to the vertex, here it contains a median pale spot; palpi pale; antennae with first few joints brown, beyond pale yellowish until near the tip which is brown; pronotum broadly pale brown in middle, divided by a pale median line, meso- and metanotum mostly pale brown, pleura wholly pale; abdomen pale, second segment mostly brown above, others broadly brown at tip with faint dark spot near base, last segment wholly dark above, pale below; legs pale, very faintly dotted on femora, tips of tibiae brown, and less distinctly on some tarsal joints, hair mostly white, but some black bristles, spurs equal four joints.

Wings hyaline, veins pale, longitudinal ones streaked with brown, many cross-veins wholly brown, others wholly pale, a series up from end of anal and curving somewhat backward is black and bordered with dark, brown spots at rhexema, at base of stigma, latter rather reddish; hind wings with a brown spot at base of the rosy stigma, and one at rhexema, veins marked much as in fore pair. Wings very broad toward tip, so that the rhexema is far from hind margin, the space behind cubitus in some places with six or seven rows of cells. Both

wings are plainly a little excavate on outer margin at end of the radius.

In fore wings the radial sector arises just a little beyond the cubital fork, six cross-veins before it, three cross-veins from anal to cubital fork, some connected, nine branches of radial sector, the cubital fork makes a wide angle with the cubitus (as in *tetragrammicus*, *annulatus*, etc.) In hind wing nine branches to radial sector, anal connected once to cubital fork, four or five rows of cells at widest part of postcubital area.

Length of fore wing, 37 mm., width, 11 mm.

Length of hind wing, 34 mm., width, 8.5 mm.

From Mullewa, West Australia, 18 Sept. (G. M. Allen). Type M.C.Z. no. 20215.

Its very broad, slightly emarginate wings, pale color, and banded abdomen recalls *F. annulatus* of South Europe. Its broad wings and second and third anal veins united for some distance puts it in the section of *Hyfoleon*.

FORMICALEON MARGINALIS spec. nov.

Face dull yellowish, a large interantennal mark reaching up, with hardly a break, to vertex, latter with median brown stripe and a large brown spot each side near eye, vertex rather higher than usual; antennae dark annulate with pale; pronotum plainly broader than long, a broad, brown stripe each side, and a narrow outer stripe from furrow back, hair black, no long white on sides; mesonotum dark on sides; metanotum dark with a pale spot each side toward middle; pleura mostly dark, but some parts with pale borders.

Abdomen dark, a pale transverse spot before middle of second and third segments, hair above very short and dark, below longer and white. Legs pale, dotted and spotted with dark, a band near tip of femora; at basal section and at tip of tibia above are shining black spots, tips of tarsal joints dark, bristles black, some hair above pale. In all tibiae, but especially the front and mid pairs, the basal section is swollen above so that it bulges out from the rest of the joint more than in any other species known to me; spurs of front and mid legs more than equal first four joints, in hind legs equal to four joints.

Wings rather broad toward tip, not acute; in both pairs of the outer margin is fumose rather broadly. In fore wings the longitudinal veins are interrupted, with dark spots or streaks, many cross-vents wholly dark, a few wholly white in apical half. Many dark spots or clouds in

postcubital area, largest on end of anal, a fairly large one at rhexgma, the outer row of cross-veins margined with dark, last three radial cross-veins, and some poststigmatal ones also margined, some of the cross-veins in basal half of wing behind medius are more or less margined, stigma white, with dark spot each side, hair on veins rather short and very fine.

In hind wings venation mostly dark, a dark dot at rhexgma, and at base of stigma, the fumose margin extends up around tip and nearly to stigma. In fore wings five cross-veins before radial sector, nine branches to radial sector, four between anal and cubital fork, thirteen branches from anal to margin, the radial sector arises just about as far forward as the cubital fork; second anal connected to third by a very short cross-vein, the cross-vein above arising nearly its length beyond the separation.

In hind wing nine branches of radial sector, one or two between anal and cubital fork, eight branches of anal to margin, postcubital area with mostly two series of cross-veins, except toward tip, the cubitus parallel with margin for most of distance, the greatest width about equal to space from medius to radius at first branch of radial sector. Poststigmatal cross-veins in both pairs.

Length of forewing 22.5mm., width 5.9mm., length of hind wing 22.5mm., width 5mm.

From Tenasserim, Burma. Type M. C. Z. no. 23228.

FORMICALEON HELENE spec. nov.

Face pale, a brown band below antennae, large spot above, a band at front of vertex, and a row of spots behind; labial palpi dark at tip; pronotum brown, median pale spot in front part, a pale streak each side, its anterior end enlarged and containing a dark spot, hairs above all black, a few long, curved white ones each side; rest of notum mostly dark, but paler through middle; pleura with some dark spots, white hairs below; abdomen dark, obscurely marked with pale each side, white hair below, above with minute hair almost invisible.

Legs pale, spotted with brown, tip of hind femur brown, tibiae twice barred with brown, tips of tarsal joints dark; spines black, but some white on mid and hind femora below; hair mostly white, black above on front femur; spurs equal four joints; in male much very long, fine black hair on hind femora and tibiae, mostly on inner side below.

Wings moderately broad, tips not acute. In fore wings longitudinal

veins pale, interrupted with dark, cross-veins partly dark, some wholly dark; a small dark spot at rhagma, a faint brown spot at end of cubital fork, no forkings or cross-veins bordered, stigma scarcely dark within.

In hind wings the subcosta, radius, and cubitus interrupted with dark, other venation mostly pale.

In fore wings seven or eight cross-veins before radial sector, eleven branches to radial sector, five or six cross-veins from cubital fork to anal, eleven branches from anal to hind margin, second anal touches third at a point, the third forked, postcubital area at widest broader than rest of wings at that place.

In hind wing nine or ten branches of radial sector, anal ends before cubital fork, so no connection, five branches of anal to hind margin; postcubital area very narrow, the cubitus about parallel to hind margin, at widest not equal to space from cubital fork to radius, mostly divided by one row of cross-veins; poststigmatal cross-veins in both wings.

Length of fore wing 29 mm., width 6mm., length of hind wing 29 mm., width 5.5mm.

From Tenasserim, Burma. Type M. C. Z. no. 23227.

FORMICALEON MARCIDA spec. nov.

Face pale, a black band below antennae, a dark band above containing a median pale spot, a row of connected spots across front of vertex, and the usual spots of *dirus* behind; antennae pale, narrowly annulate with dark; pronotum much broader than long, pale, a fairly broad submedian stripe each side, tapering behind, lower posterior sides nearly black, and between are a few dark shadings, short dark hair above, sides with long, curved white hairs; rest of notum mostly pale in middle, dark on sides, mesonotum with an intercalated line, scutelli with pale hind border, except dark dot in middle; pleura pale, with a few dark streaks, much long white hair.

Abdomen gray brown, with pale spots on the plan of *F. dirus*, venter pale, hair above short and dark, below but little longer, white. Legs pale, dotted and spotted with dark, fore femur darkened above and with black hair, mid and hind femora dark at tip and latter with a basal streak, tibia with side spots and with three elongate spots above, hair and bristles mostly white, some bristles on tibia black, outer side of hind femur and tibia of male with long white hairs, inner side of hind femur with long black hairs, spurs equal to about four joints.

Wings with veins much as in *F. dirus*, a spot at rhexema and at end of cubital fork, some outer cross-veins and marginal forkings dark, stigma pale, dark within, the largest space of wholly white veins is obliquely below the stigma, the patches elsewhere are small; in hind wings few marks, the rhexema and some outer forkings brown.

In fore wings eight cross-veins before radial sector, twelve branches to radial sector, six between anal and cubital fork, eight or nine branches of anal to margin, second anal touches third at one point, the cross-vein beyond the separation; postcubital area at broadest more than one-half of wing at that point. In hind wing eleven branches of radial sector, no cross-vein from anal to cubital fork, the anal ending before forking of cubitus, four branches from anal to margin, postcubital area very narrow, the cubitus parallel to the margin, hardly one and a-half times as wide as costal area. Poststigmatal cross-veins in both wings.

Length of fore wing 28.3mm., width 6mm., length of hind wing 29mm., width 4.7mm.

From Nedungatu, Tanjore, S. India, 4 to 14 Febr. (P. Susai Nathan). Type M. C. Z. no. 23226.

DISTOLEON ALICIA spec. nov.

Face pale, a dark mark under each antenna, a large spot above vertex with a margined transverse scar each side, behind is a pale median line, and dark each side, antennae brown, very narrowly annulate; labial palpi with dark tips. Pronotum dark, a pale median line, dark hair, no white ones on side; mesonotum dark, pale in middle; metanotum dark, a pale spot each side and at tip of scutellum; pleura dark above, paler below, with some white hair. Abdomen dark, faintly pale each side above, very short, black hair.

Legs pale, much dotted with dark, tips of tibiae and tarsal joints dark, spurs equal four joints in front legs, three or more in hind pair, most of hair black, some white below, spines black.

Wings moderately broad, tips not acute; veins pale, longitudinal ones interrupted with dark, others dotted with dark, a spot at rhexema, and there and beyond some cross-veins wholly dark, last two radial cross-veins and some poststigmatal cross-veins also dark, a faint spot at end of anal vein, stigma large, white, brown within.

In hind wings longitudinal veins mostly streaked with dark, and others dotted with dark, but some in apical half wholly dark, stigma

brown, small. In fore wings the second anal unites with the third for such a distance that the second anal appears forked; eight or nine cross-veins before the radial sector, twelve branches to radial sector, four cross-veins between anal and cubital fork, postcubital space broad, at widest one-half of wing width at that place.

In hind wings twelve branches to radial sector, no cross-veins from anal to cubital fork, eight branches of anal to hind margin, postcubital area moderately broad, at broadest equal to space from cubital fork to radius, mostly with two rows of cross-veins. Poststigmatal cross-veins in all wings.

Length of fore wing 29mm., width 7mm., length of hind wing 29mm., width 5.8mm.

From Tenasserim, Burma. Type M. C. Z. no. 23224.

DISTOLEON RHODOCERUS Navas

Face pale, a black mark under each antennae, a black mark above antennae up to top of vertex, a band on vertex and behind this the usual six dull spots, antennae brown, annulate with pale, basal joint with dark spots; labial palpi scarcely dark near tip. Pronotum dark, a pale median line, and two narrow stripes each side, apparently no long white hairs on sides; meso- and metanotum dark, with a few pale spots, pleura dark, with mostly white hair; abdomen dark, a faint pale streak each side above, above with black hair, below with white.

Legs much dotted and spotted with dark, front femora mostly dark, hind femora dark on apical half above, all tibia with usual two bands, tips of tarsal joints dark, hind tibiae with a dark streak below; spurs equal to three or nearly four joints. In male with much long, fine hair below and on outer side of hind femora.

Wings broad, but tips acute. In fore wings the longitudinal veins largely dark, subcosta, radius, cubitus and anal interrupted with pale; dark spots along cubitus, stigma and rhexema with dark spot; toward outer margin many cross-veins and forks marked with brown, last two radial cross-veins broadly brown, some poststigmatal cross-veins also brown bordered; in cubital area many spots near posterior part, a large one at end of cubital fork, and up on the recurrent, back on cubital fork. In hind wings veins mostly brown, longitudinal veins interrupted with pale, a spot at rhexema, and some outer forkings dark.

In fore wing eight cross-veins before radial sector, eleven branches to radial sector, four cross-veins between anal and cubital fork, a dis-

tinged curved recurrent vein, postcubital area very broad, at broadest more than one-half width of wing, second and third anal united only for a short distance.

In hind wing twelve branches of radial sector, two cross-veins between anal and cubital fork, six branches of anal to the hind margin, postcubital area very broad, at broadest about one-half width of wing. Poststigmatal cross-veins in all wings.

Length of fore wing 33mm., width 9mm., length of hind wing 31mm., width 7mm.

From Coimbatore, S. India, Nov. to Dec. (P. Susai Nathan).

Navas has made this the type of a new genus because of broad wings, but proportions are about the same in the European *D. annulatus* Klug.

DISTOLEON PALLIPENNE spec. nov.

Face pale; a large, dark brown spot from below antennae up to vertex, where there are some black lines and rows of dark brown spots; antennae pale yellow brown; pronotum slightly narrowed in front, a little wider behind than long, with a broad, pale gray area in the middle, somewhat narrowed behind, the sides dark, but the upper margin, next the pale is darker than elsewhere, hairs above black, two long curved, white hairs each side; meso- and metanotum broadly pale through the middle, sides dark, scutelli wholly pale; pleura pale, faint traces of a dark stripe; abdomen dull brownish yellow, hair mostly white above, black on sides, and longer white below.

Legs pale, barely dotted and banded with brown in usual places, bristles mostly black, those below hind femora white, in male with long white hair on lower inner side of hind femur; spurs equal to three joints. Wings moderately broad, tips acute, and in hind pair almost concave on outer margin before tip; in fore wings venation pale, longitudinal veins with pale brown streaks or spots, some of the cross-veins, especially costals, partly dark, outer marginal forks and those in apical area brown, also some other forks and a few cross-veins, most noticeably the first radial beyond stigma, stigma hardly noticeable; in hind wing venation pale, hardly with any dark spots, but some outer and apical forks brown; In fore wings six or seven cross-veins before radial sector, thirteen branches of radial sector, four or five cross-veins from anal to cubital fork, ten branches of anal to hind margin, post cubital area at the widest about one-half of wing, the second anal united to third for a moderate distance and the cross-vein from this united part.

In hind wings eleven branches of radial sector, one cross-vein from anal to cubital fork, seven branches from anal to margin, postcubital area at widest about two-thirds of width of wing at that place.

Length of fore wings 26.5mm., width 7mm., length of hind wing 27.5mm., width 5mm.

From Chapra, Bengal, India (Mackenzie). Type M. C. Z. no. 23225.

NOCALDRIA PALLIDA spec. nov.

Head pale, a short brown band below antennae, one above antennae, vertex with a broad brown band from eye to eye, its hind margin black, antennae pale brown, tip slightly darker; palpi pale; pronotum pale, each side with a broad brown spot on each side margin, about five long, curved, white hairs on each posterior side; rest of notum pale, with dark on sides and at bases of scutelli; pleura pale; abdomen dark, or pale on one or two basal segments and then with a median dark line, venter dark, last segment in male mostly pale, abdomen with very short white hair. Legs pale, femora and tibiae sometimes faintly dotted, tips of tarsal joints scarcely dark.

Wings hyaline, with pale veins. In fore wings longitudinal veins with dark at ends of some cross-veins, a few of the apical cross-veins margined with brown, and a few apical forks also brown; stigma indistinct, brownish.

In hind wings only a few longitudinal veins here and there dark, but a distinct dark cloud from rhexma out to the margin.

Vertex considerably swollen; antennae about one half the diameter of basal joint apart. Pronotum much broader than long, somewhat narrowed in front; each lateral lobe of metanotum with a ridge-like swelling.

Abdomen much shorter than wings, cerci of male pale, as long as last segment, parallel, with much fine hair and above with about six erect black bristles. Legs short, femora thickened, tibia shorter than femur, tarsi a little longer than tibia, first joint very short in front and mid legs, but little longer than the second joint, in hind legs first joint almost as long as second and third together, fifth joint nearly as long as other four together, claws only slightly curved, not one half of last joint; spurs very short, and in some specimens scarcely visible, perhaps absent, sometimes from one half to two thirds the length of first joint, on hind legs, when visible, only about one third of basal tarsal joint; on front coxae are a few long, curved, white hairs, rest of hair very short,

no long bristles anywhere, last tarsal joint with two rows of short spines beneath.

Wings slender; front wings not acute at tip, hind pair more so. Fore wings with seven cross-veins before radial sector, seven branches to radial sector, faint indication of banksian lines, basal cubital fork distinct; eight branches of anal vein to the margin; second anal unites with the third for a short distance; third anal forked.

In hind wing one cross-vein before radial sector, seven branches to radial sector, seven branches of first anal to margin, cubital field mostly with two rows of cells.

Length of body 16 to 18 mm.

Length of fore wing 20 to 22 mm.; width 4 to 4.5 mm. Length of hind wing 19 to 21.5 mm.; width 2.9 to 3.2 mm.

From Bangalore, South India, 21 to 27 April (P. Susai Nathan coll.). Type M.C.Z. no. 23029.

The type of *Nocaldria* is *signata* Navas (1917) from Abyssinia; Petersen in 1928 gives a figure. According to Navas and Petersen the first tarsal joint is rather longer than in *N. pallida*, but otherwise they agree fairly well. In 1912 Navas described *Delphimeus*, this was said to have no spurs, and first tarsal joint as long as fifth. In 1927 Navas says *Delphimeus* has very short, inconspicuous spurs and puts the genus as a synonym of the later *Nocaldria*. But the difference in tarsal structure would separate them, as well as the broad wing of *Delphimeus*. *Maracanda* from Central Asia, said to have very short spurs, has three cross-veins in hind wing before radial sector, and the second anal runs free from the first, so it must go in the *Dendroleoninae*.

HAGENOMYIA AUSTRALIS spec. nov.

In general similar to other species, smaller, and with more narrow wings. The face is yellowish, no dark on clypeus, a dark spot between and below antennae, and containing a pale median T-shaped mark, vertex mostly dark, with a narrow median pale line; tips of palpi dark; antennae nearly black; pronotum dark on middle, broadly pale on sides, on posterior part the extreme margin is dark, meso- and meta-thorax above mostly dark, metascutellum pale, pleura pale, with a dark stripe as usual; abdomen dark brown, paler below, hair whitish; legs pale, faintly darkened in middle of femora and outer base and the inner part of hind tibia; spurs equal to first tarsal joint.

Wings slender, tips nearly acute; unmarked, except the rather small

pale stigmal spot; veins mostly dark, but subcosta, radius and cubitus pale, with dark at ends of cross-veins. Venation not as dense as in most species, for example between cubital fork and first anal vein but three connecting cross-veins, seven or eight cross-veins before radial sector in fore wing, radial sector arising a trifle beyond cubital fork; the costal area has about twenty cross-veins before stigma connected (more than usual); in anal area the series of connecting veins is also longer than usual, lacking but two of the end. The space between cubitus and intercubital line has two series of cells for the first quarter way out, then two and one-half series, the line in most of its distance being as close to hind margin as to the cubitus.

Fore wing 27 mm. long, 6.5 mm. wide.

From Coen, Cape York district, Queensland, Australia, May to June (Darlington). Type M.C.Z. no. 22190. Paratypes from Redlynch, Queensland (Wind).

H. papuensis Weele, which I have seen from New Guinea, has a sinuous dark band below the antennae, between it and the interantennal mark is a pale band extending each side to the eye, the clypeus is entirely dark, the wings are much broader, the costal area noticeably broader.

MICROMIDAE (HEMEROBIIIDAE)

ZACHOBIELLA PALLIDA spec. nov.

(Fig. 55)

Head yellowish; pronotum more brown, paler on sides, metanotum darker behind; abdomen brown above, pale below; legs pale, unmarked, tibiae swollen; antennae brownish, base paler.

Wings hyaline, veins pale, scarcely marked, the cross-veins sometimes a little darker, a dark cloud at extreme base, extending out a short distance along anal margin.

The fore wing is slender as in the genotype, the apex scarcely pointed; two of the upper gradates form a straight line almost behind the first upper one; marginal forks so small as scarcely visible; outer radial sector with a long fork reaching back before the cross-vein to radius, next fork very short; the costal area is scarcely noticeably swollen near base; in hind wing but two cross-veins.

Length of fore wing 5 mm.; width 1.5 mm.

From Lake Barrine, Atherton Tableland, Queensland, Australia, 18 April 1932, 2300 ft. (Darlington). Type M.C.Z. no. 22386.

Distinguished from *Z. submarginata* Petersen by more slender wings, longer fork of outer radial sector, minute marginal forks, and lack of spots in fore wing.

ZACHOBIELLA HAINANENSIS spec. nov.

(Fig. 91)

Head pale yellowish, darker on vertex, pronotum with broad brown stripe through middle, meso- and metanotum dark in middle, pale on sides and in front; abdomen brown above, pale below; legs very pale, unmarked, hind tibiae much swollen, antennae mostly brown, but apical part paler.

Wings hyaline; fore wings with longitudinal venation almost wholly pale, unspotted, but upper branch of medius is dark brown for some distance before tip, but not reaching tip, and upper branch of first radial sector is dark near tip and including fork making a triangular dark area at tip of wing, the lower branch of first radial sector is dark toward tip, but not on marginal fork; cross-veins (except one) are dark brown; the stigma has a scarcely distinct cloud. In hind wings the venation is mostly pale, unspotted, but apical part of first branch of radial sector is dark brown, likewise the apical part of the medius. In fore wing the fork of outer radial sector reaches to the gradates, slightly indenting the row; wings slender as in the genotype.

Length of fore wing 4.5 mm., width 1.5 mm.

From Ta-han, Hainan, 23 and 24 June (Gressitt coll.). Type M.C.Z. no. 22387.

DREPANACRA PLAGA spec. nov.

Body brownish, head rather paler, legs and antennae yellowish brown, fore wings more yellowish, veins pale, often interrupted with pale brown, and sometimes darker brown spots, a large brown spot near the middle of fore wing over the middle cross-veins of the inner gradates, and above toward costa are several smaller spots of dark brown, most prominent on costa, four or five of upper outer gradates bordered with dark, an elongate dark mark over anal area; hind wings with dark cloud before the yellowish stigma, one over the lower part of cubitus, two or three of upper outer gradates dark marked, and a faint cloud near end of medius. In fore wings no fenestrella nor distinct lunule, but the fringe along concave outer edge is pale in patches.

Fore wings falcate at tip about as in *D. instabilis*, the costal area rather broader at base than in *instabilis*. Venation similar to the Australian forms, except that cubitus 2 in hind wing is seen only at base and tip (in some Australian species it is fainter in middle than at ends). Fore wing with six branches to radial sector, first and second soon unite and just beyond the cross-veins separate (I note a similar condition in one wing of a specimen of *D. bioculata*), last radial sector connected twice to radius; four (hyaline) cross-veins in basal series, nine inner and eleven outer gradates.

Hind wing scarcely falcate at tip, costal area at stigma much swollen, six branches of radial sector, first and second (as in Australian species) continued obliquely back to radius, five inner and nine outer gradates.

Male genitalia on plan of Australian species, two bristly elongate processes pressed against tip of abdomen, but not separated much in middle, and the tips rather broad and bent under the abdomen; the lateral wart circular.

Fore wing 9.5 mm. long; 4.5 mm. broad.

From Musha, Formosa, 21 May (Gressitt collector). Type M.C.Z. no. 22388.

MICROMUS PERKINSI spec. nov.

Of the same general appearance as *M. froggatti*, but rather larger and with broader wings; the veins marked with brown as in *froggatti*, but not so heavily, and the marks not as dark. Four radial sectors; the two rows of gradates are not parallel, the inner row more transversely across wing than in *froggatti*, the veinlets but little separated, some almost in a line, and the outer row of gradates make a much less even row than in *froggatti*, the second and fifth veinlets being more remote from the median two.

Expanse 17 to 18 mm.

From the Bundaberg district of Mid-Queensland, Australia (Perkins coll.). Type M. C. Z. no. 11924.

Readily separated from *M. froggatti*, which is very common in Southern Australia, by the difference in gradates, and less distinctly spotted appearance; the two gradate series are nearly parallel in *froggatti*. I have seen no Tasmanian specimens, and if those are the same, then *froggatti* is the same as *tasmaniae*. Tillyard in his table (Proc. Linn. Soc. N. S. Wales, 1916, p. 30) says *tasmaniae* has five branches from the radial sector; in the numerous specimens of *frog-*

gatti I have not seen more than four, and sometimes only three. The New Zealand form has venation more like *M. perkinsi*, but in my two specimens the vertex seems higher.

BEROTHELLA Bks.

It differs from *Nosybus* in no cross vein from medius to radius; in the absence of cross-veins in the apical part of wings; and the costal cross-veins are almost wholly simple (in *Nosybus* mostly forked). In hind wing three radial cross-veins, and no cross-veins in apical half of wing. Type *B. phantoma* Bks. from Malacca.

BEROTHELLA PRETIOSA spec. nov.

(Fig. 92)

Body yellowish, clothed with yellow hair, face unmarked; antennae pale, a few joints toward apex rufous; abdomen brown above, hair near tip almost golden; legs very pale, with long pale hairs. Wings yellowish hyaline, clothed with long yellowish hair on veins and around margin, but those on costa are shorter and more appressed.

Fore wings with faint yellowish brown clouds arranged transversely, tending to make five or six irregular bands; the cross-vein closing discal cell and that to the medius and from medius to median branch, and the apical third of posterior side of discal cell are black; elsewhere the veins are very pale; hind wings unmarked, and with pale veins. In fore wings four radial cross-veins and most of the cross-veins tend to form a curved line across middle of wing, but few before it and two just beyond it. In hind wings three radial cross-veins, two between radius and its first sector, three between first branch and the medius, one between medius and its branch, and one from medial branch to cubitus; as in fore wing most of these cross-veins tend to form a curved line across the wing.

Length of fore wing 6.2 mm., width 3.5 mm.

From Ta-han, island of Hainan, 23 June (Gressitt). Type M.C.Z. no. 22389.

This differs from *B. phantoma* from Malacca in the heavier marked wing, four radial cross-veins, and in positions of some of the other cross-veins as shown in the figure.

SISYRINA gen. nov.

Similar in nearly all respects and in appearance to *Sisyra*, but the subcosta does not run into radius, and there is a subapical row of gradate veins in both wings.

It differs from *Neurorthus* in lacking the middle (inner) series of gradates, and in much narrower costal area; from *Climacia* in that the subcosta and radius are not united near the tip; from *Sisyrella* in having subapical gradates.

SISYRINA NIRVANA spec. nov.

(Fig. 36)

Head yellowish brown, hair yellowish; antennae with basal fourth (seven joints) jet black and with black hair, beyond pale yellow, with yellow hair; thorax brownish; abdomen darker brown, especially toward tip, venter paler; legs pale, sometimes hind femora or part of tarsi darker. Wings with dark membrane, veins black, a black line through middle of many of the cells, hair black.

Fore wing with seven sub-apical cross-veins, upper three in a straight line, next a short distance basad, the next further basad, and the next two also. Costal area with cross-veins only in basal part, beyond with granules, the bases of hairs. The genital parts are two stout claspers, curved toward each other.

Fore wing 3 mm. long.

From Nedungatu, South India, 24 Febr. (P. S. Nathan). Type M.C.Z. no. 22390.

NOTHOCHRYSIDAE (CHRYSOPIDAE)

CHRYSOPA (INDOCHRYSA) NIGRIBASIS and varieties

The typical form from Malacca has scarcely any marks on the wing, faint small clouds only, except for the dark marks by the costa near base; all the branches of the cubitus to hind margin are plainly oblique.

Esben Petersen described *C. decorata* from Formosa; it is but a variety of *C. nigribasis*; the branches from cubitus are just as oblique,

the basal costal space as broad, but there are two prominent spots in the fore wing, one over the lower gradate of the outer series, and another over the forking of the first anal vein. This form also occurs on the island of Hainan.

But from another locality on Hainan I have another form; in this there is but one prominent dark spot and this is over the branch of cubitus from the fifth cubital cell, moreover this branch is not oblique, altho all the other branches are. The same condition is found in the two specimens of *C. nigribasis* which I have seen from the Philippines, but in these the dark mark is not as prominent.

I call this form *C. nigribasis* var. *rectoides* var. nov. It is a little smaller than typical *nigribasis*, the face and mesonotum marked the same, and the costal area near base as wide, but it differs in this one cubital branch not being oblique, and having a more or less definite dark spot.

The type is from Dwa Bi, Hainan, 20 July (Gressitt). Type M.C.Z. no. 22663.

NOTHOCHRYSA CARLETONI spec. nov.

Head yellowish, unmarked; palpi pale, antennae black, except the basal joints yellowish; thorax yellowish, a broad reddish (or red-brown) stripe each side on the pronotum and continued back over rest of thorax; legs pale, mid femora with a faint dark band, and basal part of hind femora darkened; pleura marked with red-brown; abdomen brown; wings with the longitudinal veins very pale, also pale are the cubitals, divisory, and most of the branches of cubitus to the margin; the inner gradates wholly dark, the outer gradates very pale as a continuation of the medius; costals dark; radials in part, and also partly dark on the branches of the radial sector, the radial sector itself marked with dark, outer forks brownish; stigma yellowish, very long. In the hind wing the radial sector, its branches, and the inner gradates more or less brown. A brownish spot on hind margin between the first anal vein and the first branch of cubitus, and before this four of the branches of the anals very distinctly brown. Shape of wings similar to *N. aequalis*. In the fore wings 28 to 30 costals; 18 to 20 radials, 8 cubitals beyond the third cell, latter nearly equally divided; 7 branches of radial sector before gradates, about 12 gradates in each series, subparallel, the outer nearer to margin than to the inner row, about 18 branches of cubitus to the hind margin; the post cubital area about one and a half times as wide as the cubital area.

On hind wings about 9 or 10 gradates in each series, the outer much nearer to the margin than to the inner row.

Length of fore wing 22 to 23 mm., width 6.2 to 6.8 mm.

From Kulu, North India (Carleton). Type M.C.Z. no. 20223.

Several specimens, some in poor condition. It will not fit any described species. Needham had his *N. lefroyi* from Kulu, but that is quite different, close to and probably identical with *N. aequalis*. Navas has two species from Sikkim; *N. stitzi* 1924 and *N. talaverae* 1928. His figures of wing base are practically the same; I have this form from Omei Shan, West China. *N. carletoni* is about the size and shape of *N. ludekingi* Weele (*ignobilis* Navas) from Sumatra and Malay Peninsula, but in that species the wing roots are dark, and the venation differently marked, etc.

ANKYLOPTERYX LATICOSTA spec. nov.

Face, palpi, and antennae pale, a brown mark under each eye, vertex greenish, slightly reddish each side by eye, basal and second joint of antenna with a reddish-brown mark on outer side, pronotum pale, greenish on sides, a dark dot each side in front; mesonotum brown in front, rest and metanotum green, abdomen greenish, discolored; legs pale, front tibiae with dark spot in front beyond middle. Wings with greenish venation, base of costa black, and a few black dots beyond, a brown mark from end of third cubital cell down over ends of the anal vein, also a brown cloud over the lower two gradates of inner series, and fainter ones beyond, a black dot at base of radial sector, and toward stigma a few more black dots at end of radials and a brown cloud near by; stigma brown, short, also faint brown clouds in lower part of cubital cells beyond the third, and sometimes faintly other marks; a black longitudinal spot over the subcostal cross-vein. In hind wing similar small clouds, the one over anals very small, and none on lower end of first gradate row; stigma brown, short.

Pronotum a little broader than long; in fore wing the costal area unusually broad, more than twice as broad as the widest part of radial area; divisory cell four-sided, of fair size, five cubital cross-veins beyond it; postcubital area twice as broad as cubital area, first gradate row much curved, the first two or three gradates close together, almost in line, seven in row, second row evenly oblique, about seven and eight.

Fore wing long 16 mm., wide 7 mm.

One from Ta Hian, Hainan, 23 June (Gressitt coll.). Type M.C.Z. no. 23427.

ANKYLOPTERYX FRATERNA spec. nov.

Pale yellowish or greenish on body, antennae, and legs, a brown mark under each eye, basal joint of antennae unmarked; front tibiae with the dark spot, in one specimen a little darker over base of fore wings. Wings with marks and venation very similar to *candida*, but only five cross-veins beyond the divisory cell; inner gradate row no more sinuous than in *candida*; radial sector scarcely bent as far backward as in *candida*.

Length of fore wing 11.5 mm., width 5 mm.

Several from Vo Law, 9 July, Nodoa, 28 to 30 June, 11 July, Ta Hian, 15 June, all Hainan, and Moi Hinon, Kwantung, 8 July (Gressitt coll.). Type M.C.Z. no. 23428.

The four species of *Ankylopteryx* known to me from China can be tabulated as follows:

1. No spot on front tibia; divisory cell about three times as long as broad, small; basal joint of antenna with stripe on outer side. *doleschali*
A dark spot on front tibia; divisory cell broader. 2
2. Basal joint of antenna with dark stripe or mark on outer side. 3
Basal joint of antenna unmarked. *fraterna*
3. Base of costal vein black for a short distance; costal area unusually broad; five cubital cross-veins beyond divisory cell. *laticosta*
Base of costal vein not black; costal area normal; six cubital cross-veins beyond the divisory cell. *candida*

Ankylopteryx candida Fabr. I have seen from Szechuan and Fukien provinces of China.

Ankylopteryx doleschali I have from Dwa Bi, 24 July, and Ta Han, 23 June, both Hainan.

CONIOPTERYGIDAE

SPILOCONIS PICTICORNIS spec. nov.

(Fig. 96)

Head and body dark; wings gray, with darker veins and with whitish powder; legs dark on femora and base of tibiae, rest pale; antennae pale yellowish on basal two long joints and also on the next seven, then two joints very dark, then two joints pale yellowish, then seven joints very dark; twenty in all. Fore wings with the apical cross-veins

(or pale lines) in a transverse row, much as in *S. interrupta*; the first swelling on median vein for a bristle is at end of the cross-vein to cubitus; the line (or veinlet) from radial sector starts quite close to the radius and ends on median beyond the end of that from cubitus to median. The hind wings are evenly gray, with darker veins, much as in *S. maculata*. The marginal fringe on both wings is longer than in *S. cerata* or *S. interrupta*.

Fore wing 2.2 mm. long.

From Five-Finger Mts., Hainan Island, 10 June (Gressitt). Type, M.C.Z. no. 22697.

SPILOCONIS CERATA Hagen

(Figs. 2, 3)

In Hagen's series of *Coniopteryx cerata* are two species; one with wings less than two millimeters long is a *Malacomyza*; the other with fore wings about two and one half millimeters is a *Spiloconis*. In his description Hagen refers to the two long basal joints of antennae, and to the second sector being bifurcate; these together with the size given show that he was describing the *Spiloconis*.

The *Malacomyza* (and that of Enderlein) appears to be *M. ambigua* Withycombe, but the cross-vein from cubitus to medius is a little further basad than in Withycombe's and Enderlein's figures; the fork of medius is longer than fork of radial sector as in *M. ambigua*, and otherwise they agree.

S. cerata Hag. is yellowish; palpi black; antennae with first two joints elongate, pale yellowish, and about eight joints beyond yellowish, beyond that the joints are all dark brown; legs pale yellowish. Wings pale gray, unmarked, veins darker. Vertex elevated and truncate in front, but not as high as in *S. interrupta*.

Fore wings with venation similar to *S. maculata*; the cross-vein from medius to radial sector is oblique and much before the cross-vein from radial sector to radius; the enlarged spots for bristles are about as in *S. maculata*, not very distinct and the bristles delicate.

In hind wing the vein between radial sector and medius arises from the cross-vein much nearer to the radial sector, almost a branch of it.

Fore wing 2.4 mm. long.

The *Malacomyza* may have been in a later sending from Nietner, as he had two or three sendings from Ceylon.

MANTISPIDAE

THERISTRIA BASALIS spec. nov.

(Fig. 18)

Head yellowish, marked with brown, a spot on labrum, sometimes one just above clypeus, one below each antenna, usually connected to a larger spot above each antenna, these often connected at outer side to a band across vertex, which is often trilobed in front; basal joint of antennae pale, beyond nearly black, palpi marked with black; pronotum yellowish brown to dark brown, uniform, no pale median stripe; meso- and metanotum dark, often pale in front; abdomen dark, each segment above with an oblique pale mark each side; venter pale; sides showing some pale streaks in female.

Front legs largely pale, inner side of femora dark, outer side often dotted; mid and hind legs with femora, tips of tibiae and the tarsi more or less dark. Wings with dark venation, anals mostly pale, stigma almost wholly dark brown.

Pronotum moderately slender, constricted in middle, anterior part not much wider than posterior part which is scarcely longer than the anterior part; last ventral segment of male short, usually subtriangular, the apex pointed. The front femur is but little swollen, the large inner spine at basal third, outer edge with mostly short teeth, reaching nearly to base, all pale.

The stigma is short, base very oblique; of the three radial cells the second is as long or longer than the others, about six or seven branches to radial sector, seven or eight costal cross-veins, about eight gradates.

Length of body 8 to 14 mm., length of fore wing 10 mm., width of fore wing 2.4 mm.

Ten specimens from Mullewa and Pindarra, West Australia, 15 to 19 Sept. (Wheeler and Darlington). Known by its short wings, short stigma, and the sub-basal position of the long spine of the femur. Type M.C.Z. no. 22100

THERISTRIA STIGMALIS spec. nov.

(Fig. 15)

Head yellowish, with brownish spots, one on labrum, a triangular one just above clypeus, one beneath each antenna, a larger spot above each antennae (sometimes connected), two submedian reddish brown

lines back to the broad band of posterior part of vertex, sometimes these lines are broad and connected; first and second joints of antennae pale, beyond blackish, palpi dark at tips. Pronotum dark on sides, with a narrow median pale stripe; meso- and metanotum mostly dark, but two oblique pale spots near middle; abdomen dark, with the usual oblique pale mark each side on the segments above, venter pale. Front legs largely pale, but more or less definite red-brown stripes on outside of coxa and femur, inner side of femur with a dark spot toward tip, mid and hind femora mostly dark, but tibiae and tarsi almost wholly pale. Wings with pale venation, yellowish to yellow brown, stigma with an elongate brown cloud.

Pronotum rather broad in front, constricted a little before middle; last ventral segment of male elongate, slender, blunt-pointed. Front legs very slender, the femur scarcely at all swollen, the long spine of inner side is distinctly beyond middle of lower edge, on outer edge the teeth near base are very small, toward tip a few longer ones, the long inner spine is plainly longer than the diameter of the joint, the teeth are partly dark. Stigma extremely long, inner side fully two or three times as long as width of stigma; of the three radial cells the second is a little shorter than the others, nine to eleven branches of radial sector, about nine costal cross-veins, eleven to thirteen gradates.

Length of body 12 to 14 mm., length of fore wings 17 mm. width of fore wings, 4. mm.

From Coen, Cape York, Queensland, Australia, 14 May (Darlington). Type M.C.Z. no. 22099. Readily known by pale veins, very slender wings, very elongate stigma, and very slender front legs, the long spine being placed beyond the middle of the femur.

THELISTRIA MEDIALIS spec. nov.

(Fig. 13)

Head yellowish, face with a fine black line each side on the groove, which above antennae becomes a stripe reaching vertex to the black on occiput, an arched black band just above antennae, from this band a median black stripe goes back to the black occiput; basal joint of antennae pale, beyond black; palpi slightly banded with dark, pronotum broadly brown on sides leaving a pale median stripe; meso- and metanotum also black on sides; abdomen above with a pale line each side on each segment; venter pale.

Legs yellowish, front pair with dark streak on outer side of coxa and

femur, inner side of latter with large dark spot, leaving a pale area near base below, tibia dark within; mid and hind legs more or less dark on femur, tip of tibia, and tarsal joints above. Wings with mostly dark venation, costa and radius pale and two or three anals; stigma with an elongate dark spot not occupying one-half its length.

The pronotum appears more constricted than usual, the anterior part more swollen than other species, the posterior part no longer than the anterior part; the last ventral segment of the male is very broad and broadly rounded.

The front femur is moderately fusiform, the long inner spine is placed a little before middle of the lower edge, much beyond basal third, on the outer edge the small teeth reach to the base. The stigma is very long, as long as width of wing at that place; about ten branches to radial sector, eight or nine costal cross-veins, of the three radial cells the second is plainly shorter than the others, about eleven gradates.

Length of body 16 mm. length of fore wing 15 mm. width of fore wing 3.8 mm.

From Meekatharra, West Australia, 22 Sept. (Darlington). The breadth of the anterior part of the pronotum as well as the spines of front femur distinguishes the species. Type M.C.Z. no. 22098.

THERISTRIA DELICATULA var. *MINOR* var. nov.

(Fig. 14)

Head yellowish, a dark spot on labrum and one just above clypeus, none under antennae, two above antennae, connected, and reaching down each side on face along the groove, above connected on sides and middle to the dark band on posterior part of the vertex, leaving a small pale spot on each side; first and second joints of antennae pale, beyond brown; palpi marked with dark.

Pronotum dark on sides, leaving a narrow pale median line; meso- and metanotum with some pale in middle; abdomen above mostly dark, the usual spots greatly reduced, venter mostly dark, but the ventral plate is very pale as well as the middle part of two or three segments before it.

Legs pale, front coxae and femora with faint outer reddish-brown streak, inner side of femur largely dark, but lower basal part pale; mid and hind femora dark beneath, tibiae and tarsi slightly dark at tips. Wings rather slender, with yellowish brown venation, sub-costa darker towards base, stigma mostly dark in apical part.

Pronotum not very broad in front, posterior part longer than anterior part; last ventral of male rather elongate and broad at tip; stigma quite short, inner edge hardly twice as long as width; of the three radial cells the second is the shortest; about six branches of radial sector, seven costal cross-veins, and about eight gradates. Length of body 7.5 mm.; length of fore wing 8.5 mm., width of fore wing 2.6 mm.

From Cape York, N. Australia, 1867 (Damel) Hagen coll. Type M.C.Z. no. 22097.

Synopsis of Theristria

1. Front femur with the long inner spine but little if any beyond the basal third of lower edge; femur but little longer than coxa. 2
 Front femur with the long inner spine much beyond basal third of lower edge, near or at middle of length; femur much longer than coxa. 3
2. The three longer spines on outer side about one-half the width of femur, the long spine partly dark; stigma very long; radial sector partly pale; pronotum paler through the middle *discolor*
 The three longer spines on outer side not nearly one-half the width of femur, wholly pale; stigma quite short; radial sector wholly dark; pronotum without pale median stripe *basalis*
3. Long spine a little beyond middle of joint, and plainly longer than width of femur, latter extremely slender; the stigma as long as width of wing *stigmalis*
 Long spine a little or plainly before middle of femur, and not longer than width of femur, latter plainly a little swollen near middle; stigma usually shorter 4
4. On outer side of femur fully ten spines before the first longer one, the series nearly reaching to base, and the two longer ones are not one-half the length of the long inner spine; stigma nearly as long as width of wing; pronotum very broad in front *medialis*
 On outer side of femur about five short spines before the first longer one, and the series not reaching near the base; stigma not nearly as long as width of wing 5
5. Long spines on outer side about one-half the length of the long inner spine *delicatula*
 Long spines on outer side not one-half the length of the long inner spine var. *minor*

Besides the six species in the synoptic table several others have been described.

T. felina Gerst. has been placed as a synonym of *T. delicatula* Westw. by E. Petersen who has seen the type. The description does not agree in all points with a cotype of *T. delicatula* in the Hagen collection.

T. eurysticta Gerst. E. Petersen, who has seen the type, gives a re-description; this agrees very closely with the specimen which I have identified as *discolor* Westw., but nothing is said about the front femur, which in *discolor* is broader than in the other forms.

T. Hillieri Navas. According to the figure of Navas the vertex has two converging lines, this is found in *discolor*, but these are closer with no median line between them; femur I is said to be but little swollen, so it is probably distinct.

Navas has described a new species, *debetazi* as a new genus, *Veura*, because it had a shorter stigma than usual, nevertheless the stigma is crossed by veins. His figures show for markings a form near my *T. medialis*, but in the latter the stigma is longer, the pronotum has the anterior part greatly swollen and is just about as long as the posterior part.

Handschin has lately described a new species, *T. tillyardi*, from the Northern Territory. It has a long stigma as in *medialis* and *stigmalis*, but the markings of head fit neither; the veins are said to be white, this agrees with *stigmalis*; nothing is said of the spines on front legs, so it is impossible to place it at present. It is probable that there are various other species in Australia.

SERICOSTOMATIDAE

LINGORA Mosely

Male maxillary palpi slender, tapering, upcurved, clothed with erect, stout, often nearly fusiform hairs, labial palpi moderately long; basal joints of antennae close together, almost one half vertex width, antennae beyond slightly crenulate; vertex with a large elongate wart each side, close to eye, and widest behind the middle; spurs 2-2-4, second pair of legs longest.

Fore wings pointed, with two broad swollen streaks, densely covered with stout black hairs; one over the subcosta, the other over anal-cubital area and at end of anal turns up toward tip of wing, and ends in a point over the base of fork three. Discal cell closed in both wings, three forks in fore wing, others deranged by the swollen area. Hind

wings with forks one, two, and five. In female basal joints of antennae also elongate, fore wing also pointed, venation normal, forks one, two, three, and five; hind wings with forks one, two, and five, also apparently three.

This genus is probably as near to *Pycnocentria* as to any other; *Pycnocentria*, in male, has a swollen streak through the middle of the wing; *Olinga* differs so much in shape of wings and venation, although the posterior streak is similar.

Mr. Mosely has recently described this genus, based on a yellow-winged species from Tasmania.

LINGORA PLICATA spec. nov.

(Figs. 37, 44)

Head black, hair on palpi brown, on vertex reddish to yellowish, basal joints of antennae are densely clothed with black hair, beyond the antennae are almost white for five segments, then brown, annulate with pale, but apical third is almost wholly dark; mesonotum with some tawny hair; legs mostly dark, base of tibia pale, and part of tarsus.

Fore wing clothed with long, stout, black hair, in the male these especially dense on the swollen streaks, and on medius near tip is an area of short stout, erect black hairs. Hind wing with finer black hairs.

In fore wing the radial sector arises near base, the discal cell about three times as long as broad, fork one back on discal cell about width of cell, fork two broad at base on discal, fork three with pedicel one half of fork, the other venation in male is deranged by the posterior swollen streak; in female fork one is back a shorter distance on cell, fork three very long, fork five short, anal running into cubital fork.

In hind wing fork one and two back to cell, fork three a little long, fork five very short. In male hind wing there is no fork three.

The male has a spatulate projection at tip of the venter; the genitalia are small; a pair of sharp processes above, below is a rounded basal plate, and an elongate blunt penis.

Fore wings 4.5 mm. long.

From Barrington Tops, New South Wales, Australia, 5000 ft., 8 Febr. (Darlington). Type M.C.Z. no. 22076.

MOLANNIDAE

ALLOECELLA gen. nov.

A Molannid of the Beraea section; spurs 2, 2, 4; palpi moderately long, porrect, the last three joints subequal; antennae short, clothed with appressed curved hairs, and short erect ones, as is sometimes seen in allied genera, basal joint about as long as the vertex, latter with large elongate wart each side near eyes.

Fore wing with discal cell open and no fork one, the radial sector running close to radius in basal part and apparently not connected to radius, the medius running into it toward base of wing; no fork three, but forks four and five. In the hind wings, which are nearly as wide as the fore wings, is a large median area without veins, the lower side curving up and ending in three veins on outer margin. The fringes are not as long as in allied genera, but the hind wing, near base has some hairs about as long as width of wing.

The venation, especially that of hind wing, is very distinctive.

ALLOECELLA GRISEA spec. nov.

(Figs. 33, 34)

Body black or brown; head with some white hair, antennae black, legs pale yellowish; wings dark, clothed with black hair, hind wings with more gray hair and fringes.

In fore wings the radius is plainly thicker than other veins; between the radius and radial sector toward base is a fine hyaline line or vein; fork two reaches nearly to the cross-vein (indistinct) to medius, fork four longer than its pedicel.

Male genitalia short and not very distinct, very hairy; there is a long superior piece, the tip slightly bent down, a pair of lower, smooth, slender, pointed and slightly upcurved processes, and a broad ventral lobe with very long bristles.

Fore wing 5 mm. long.

From Mt. Donna Buang, Victoria, Australia, 6 to 7 Dec. (Darlington). Type M.C.Z. no. 22109.

MOLANNIELLA gen. nov.

A Molannid; maxillary palpi moderately long, porrect, last joint pointed, almost as long as the preceding one; basal joint of antennae

about as long as the vertex, latter with a large elongate wart each side close to eyes; spurs 2, 4, 4.

Fore wing with apparently forks two, three, and five, the radial sector connecting to radius near base of wing; between radius and radial sector is a wide space except near tip and toward base. Hind wings scarcely broader than fore wings, and with apparently four forks, the longest near hind margin toward base.

Nearer to *Molannodes* than to *Molanna*, but the forkings are different.

MOLANNIELLA ATRA spec. nov.

(Figs. 67, 68)

Mostly black, antennæ and legs rather more brownish; wings with black hair.

In fore wing the first fork has a very short pedicel beyond the cross-vein obliquely back to medius, the second fork has a pedicel about two fifths of its length, fork five is broad at base; just before the cubitus joins medius toward base of wing is a cross-vein to the anal vein.

In hind wings the first fork also has a short pedicel, the second fork a pedicel a trifle longer, this cross-vein runs obliquely to the next fork with a branch between them, another unbranched vein, and then a long fork, its base scarcely longer than the fork from base of wing. The female shows some clusters of golden hair at tip of the abdomen above, and below is a small median tooth from the next to last segment, just before the concavity.

Fore wing 6.5 mm. long.

From Mt. Kosciusko, New South Wales, Australia, 5-7000 ft., 11 Dec. (Darlington). Type M.C.Z. no. 22108.

CALAMOCERATIDAE

ANISOCENTROPUS SOLOMONIS spec. nov.

Dark brown; palpi with brown hair; antennæ dark on basal part, beyond pale and annulate with brown; legs yellowish brown. Wings very dark, sparsely clothed with yellowish to golden hair, across the wing from stigmal region to hind margin is a broad irregular band of purplish to bluish sheen, made of minute iridescent scales, the band is broader in front and behind than in middle; fringe is dark, nearly black, in a few places pale; hind wings dark, with dark hair and fringes.

In forewings, which are of moderate breadth, the discal cell is nearly as long as its pedicel, longer than second apical cell, fork one extends back on discal cell two-thirds the length of discal cell, fork two extends back about width of discal cell, fork three extends back a trifle on median cell, fork four is back on median cell to about the middle of cell. In hindwings fork one is very slender, longer than its pedicel, fork two is not nearly as long as one, fork three is back about as far as fork one, cross-vein from medius to fork five is a little oblique.

Two females.

Forewing 8 mm. long.

From Auki, Solomon Islands, (W. M. Mann) Type M.C.Z. no. 22051.

ANISOCENTROPUS SEMIFLAVUS spec. nov.

Head and thorax pale clear yellow, abdomen black; legs pale yellow; palpi pale, last joints with some dark hair; basal joint of antenna pale yellow, beyond brown, but basal half broadly annulate with pale; head and thorax with bright yellow hair.

Fore wings mostly clothed with short yellowish hair, a faint band of darker hair across over the anastomosis, extreme apex also faintly darker; veins brown; hind wings gray, clothed with black hair and black fringes, as a whole much darker than fore wings, the costa with yellowish hair.

In fore wings venation much as others, particularly *A. dilucidus*, the subcosta and radius rather close together, the discal cell slender, its base opposite forking of medius; the apical forks the same except the cross-vein from radial sector to medius is further out on fork three, and the cross-vein from medius to cubitus is nearly straight across, so that fork five is shorter, and the cross-vein from cubitus to anal is fully its length before base of fork five.

In hind wings venation much like *A. dilucidus*, but the wing is not so broad toward base.

Fore wing 8.5 mm. long.

From Lake Barrine, Atherton tableland, 2300 ft., April, Queensland, Australia, (Darlington). Type M.C.Z. no. 22083.

BARYNEMA gen. nov.

Similar to *Ganonema*; maxillary palpi five jointed, third, fourth, and fifth subequal, fifth scarcely curved, second also about as long as third, but heavier.

Discal cell in hind wings plainly closed. In fore wing the anal runs into cubital fork.

Fore wing not nearly as elongate as in *G. pallicorne*. *Ganonema* should be held for forms closely related to the genotype.

BARYNEMA COSTATUM spec. nov.

(Figs. 43, 51, 54)

Head black; thorax shining black above; abdomen dull black; antennae and palpi blackish, unmarked except basal joint of antennae is a little paler; legs blackish, spurs brown. Wings blackish, being densely clothed with black hair; fore wings with a stripe of golden hair along anal vein, fully half way to end of vein, and a curved pale band over the anastomosis, but not reaching to either margin, in front the band has mostly white hair, but behind it is almost wholly yellowish; the cross-vein to end of anal is hyaline white; hind wings unmarked. In fore wings the venation as figured, costal margin thickened; forks one and two both sessile on discal cell, fork three shorter and pedicellate, anal apparently runs into fork of cubitus or an oblique cross-vein from cubitus; in hind wings discal cell plainly closed, fork one back a short distance on cell, fork two reaches the cell, fork three pedicellate, fork five fairly long.

Male genitalia show above a pair of elongate tapering superior appendages, below is a shorter upturned pair of interior appendages, and projecting between is a stout, blunt penis.

Fore wing 9.5 mm. long.

From Mt. Donna Buang, Victoria, Australia, 6, 7 Dec. (Darlington)
Type M.C.Z. no. 22082.

LEPTOCERIDAE

SYMPHITONEURA WHEELERI spec. nov.

(Figs. 53, 70, 71)

In general very similar to *S. exigua*, a little larger, general color and hair the same and in the female the venation (which is almost like *Notanotolica opposita*); the discal cell in hind wing rather longer than in *S. exigua*.

In the male the radial sector runs so close to the much broadened medius that the discal cell is not one half as wide as in *exigua*, and difficult to see the base of cell; the first branch from the medius, which in *exigua* has a backward angle near base, in *wheeleri* is an even curve, and the next two branches seem almost unconnected at base.

In the male genitalia, which is extremely hairy, there is a pair of fairly broad plates above, subparallel (in *exigua* much narrower plates); the broad lateral claw-tipped pieces of *wheeleri* in *exigua* are bent at a right angle before the middle, and the apparently rounded tip ends between the pair of slender ventral processes; the median hyaline hood over the penis in *wheeleri* has chitinous margins tapering to a point, in *exigua* these margins end bluntly.

Fore wing 11 mm. long.

From Rottneest Island, West Australia, 23 Oct. (Wheeler). Type M.C.Z. no. 22078.

I give figures of the genitalia of a male *exigua* from King Island, Tasmania (Fig. 8).

The *S. fulva* Navas from New Guinea is quite possibly a different genus. There is a chance that the male of *Notanotolica opposita* may show that species to be a *Symphitoneuria*.

NOTANOTOLICA PARVA spec. nov.

(Figs. 4, 62)

Dark gray, mottled with pale; antennae of male dark, narrowly annulate with white; face with white hair, but a row of black close to eye. Fore wings with black, brown, and white hair in patches and streaks similar to *N. magna*. Venation also very similar to that species, the apical area beyond the anastomosis is very long; fork one hardly longer than pedicel, fork three with short pedicel, the cell above very wide at base.

It differs in the smaller genitalia, and in that the apical part of claspers is shorter than in *magna* and the lower, smooth, pointed process reaches to the tip of the apical part, and can be seen from above; the superior, bristly appendages are narrower than in *magna*, and the triangular plate at base larger, or more exposed.

Fore wing 13 mm. long.

From Ravenshoe, Atherton tableland, Queensland, Australia, 3000 ft., 27 April (Darlington). Type M.C.Z. no. 22077.

TRIPLECTIDES ELONGATA spec. nov.

(Fig. 39)

Body dark, head with white hair, and some black; palpi with mostly black hair, antennae brown, narrowly annulate with black. Wings gray, with gray and whitish hair, and some black especially along the veins. In fore wings the discal cell wider than in *delicatula*, fork one shorter than pedicel, fork three with a pedicel one fourth its length; in hind wings the fork one is present and the other forks longer than in *delicatula* or *flava*.

Male appendages show the usual parts very slender; superior appendages very long, but the ventral ones still longer, the lateral with a long curved piece and a slender apical part full as long, the basal piece below has a row of very long bristles arising from tubercles; the median piece is long, slender, bilobed, the lobes down and incurved.

Fore wing 14 mm. long.

From Blackheath, Blue Mts., New South Wales, Australia, 21 Jan., 8000 ft., (Darlington). Type M.C.Z. no. 22079.

A female from Barrington Tops, New South Wales, 9 Febr. is probably the same form, tho the fork one is longer. This is maybe *T. australis* Navas, but the length of forks is different and his description of genitalia gives no clue; besides *T. delicatula* Ulmer, I have a female of apparently another species.

TRIPLECTIDES AUSTRALICA spec. nov.

(Figs. 47, 66)

Body yellowish gray, head, thorax above, and legs with mostly white hair; antennae pale, narrowly annulate with black at tips of joints. Wings with white, yellowish, and black hair in patches, much as other species, in male hind wings darker than fore wings.

Fore wings with venation similar to *flava*, but fork one is much longer than its pedicel, and fork three reaches almost to the cross-vein; in hind wings fork one is present, and the other forks behind are longer than in *flava*. Male genitalia have a pair of slender superior appendages, the lateral ones are large, but not very long, the apical part hardly longer than the basal, and, seen from beneath, shows a process with sharp point (similar to that in *Notanotolica*); the median process is broad and slightly bilobed at tip.

Fore wings 12 to 13 mm. long.

From Ravenshoe, Atherton tableland, Queensland, Australia, 2000 ft., 27 April (Darlington). Type M.C.Z. no. 22080.

LEPTOCERUS DARLINGTONI spec. nov.

(Figs. 48, 63)

Head and thorax black, abdomen scarcely paler; palpi dark brown, as also basal joint of antenna, beyond pale and narrowly annulate with dark; head with some short white or yellowish hair and longer black hair; legs brownish; fore wings nearly black, veins brown to black, with short black hair, a hyaline white mark over cross-vein from discal cell to medius; hind wing paler, with black hair.

Fore wings acute at extreme tip, shape and venation much as in *L. albifrons*; discal cell with oblique end, fork one with rather long pedicel, fork three with a pedicel about one third of fork, fork five broad and oblique at base.

In hind wings, which are plainly broader than front pair, fork one is short, fork three only a little longer, fork five long and tapering to a point at base.

Male genitalia have above a pair of slender, parallel superior appendages, bent down near tip, and beneath a pair of outcurved reddish pieces; large and much shorter pieces below.

Fore wings 8.5 mm. long.

From Aldgate Mt., Lofty Range, South Australia, 29 Nov. (Darlington). Type M.C.Z. no. 22081.

HYDROPSYCHIDAE

MACRONEMA TRISTIS spec. nov.

(Figs. 58, 61)

Head black, a large pale spot below each eye; palpi pale; antennae pale, basal joint dark above, beyond dark at tips of joints; thorax dark, mesonotum nearly black; legs pale, tarsi rather darker; abdomen dark above and below. Wings dark gray, clothed with short black hair; in fore wings between veins are a number of yellowish spots of good size, but not especially bright; one occupying most of discal cell, one above and just before and two above and just beyond discal cell, first apical cell with one at base and one at tip, second cell with two also, third cell

(fork two) with two near base and four near tip, fourth cell with two near base, three beyond middle, and one at tip, fifth cell with several nearly confluent spots, sixth with three near base, two near middle, and one at tip, seventh cell with one near base, two near middle, and one at tip, eighth with two near base, one near middle, and one at tip; anal cell with a row, and several spots between anastomosis and base of wing. In fore wing discal cell short, triangular, fork one with a pedicel nearly equal discal cell; fork two at lower angle of discal cell, fork three scarcely a bit further back than two, fork four back further, before the base of discal cell. Male appendages show two slender ventral claspers, apical part much incurved, two short curved submedian pieces, from above, seen as divergent plates, with hyaline inner half, above them a pair of short, hairy projections; tip of penis forked.

Fore wing ♂ 11 mm., ♀ 8 mm.

From Ravenshoe, Atherton tableland, 3000 ft., 27 April, and Rock Scrub, McIlwraith Range, 17 to 29 June, both Queensland, Australia (Darlington). Type M.C.Z. no. 22085.

MACRONEMA ETHELDA spec. nov.

(Figs. 23 below, and 27)

This is similar in wing-marks to *M. pseudoneura* and is figured as probably that species by Martynov (Rec. Ind. Mus. XXXVII, p. 189). I have but one specimen of *M. pseudoneura*, and it agrees well with Ulmer's figure, and also with the veins at base of the fourth apical cell. The new species differs in that there is no appendix to the stigmal band directed toward the curved mark, but an elongate spot in the second apical cell. The basal spot is much larger than in *pseudoneura*, and the second band is plainly bent near hind margin. The pale bands are bordered by dark, and between are golden spots as in *pseudoneura*. The apical fringe is shorter than in *pseudoneura*. The discoidal cell and venation at base of the fourth apical cell are as in most species, the fourth apical cell reaching to before tip of discoidal cell. On the front tibia the tip is distinctly dark (not in *pseudoneura*). The genitalia are on the same plan as in *M. pseudoneura* but the basal part of the claspers (seen from below) is shorter, and plainly broadened near tip (not in *pseudoneura* Fig. 23.); the superior plate is more deeply indented in the middle than in *pseudoneura*.

Fore wing 7 to 11.5 mm. long.

From Shimoga, Mysore, India (Susai Nathan); many specimens. Type M.C.Z. no 22676.

In practically all of these specimens the stigmal band is more narrowed behind than in Martynov's figure, and agrees with *pseudoneura* in this respect, altho perhaps not quite as oblique.

HYDROPSYCHE DOLOSA spec. nov.

(Figs. 93, 101, 105, 106)

Head and thorax above with mostly yellowish gray hair, some black each side behind posterior warts and each side on pronotum; antennae pale, ringed as usual; palpi brown; legs pale, hind tibia of male with moderately long pale hair, spurs pale. Fore wings pale, indistinctly marked, more plainly on front and hind margin, and especially toward tip where the spots become nearly black; outer fringe black, a few pale interruptions; hind wings pale gray. Venation much as usual; fork one with pedicel nearly as long as discal cell, fork three with pedicel about one third of fork; in hind wings fork one short, but distinct. The superior plate of male genitalia has a median subangular incision, and each side a slender, filiform appendage, somewhat thickened toward tip (not as long as in *appendicularis*); the clasper has the apical joint of moderate length, tapering, and its apical half bent inwardly; the penis has a bilobed tip (divergent in one specimen, in others the lobes are bent upward), seen from the side there is a minute elevated point and before it a process with an angled side lobe, these are seen from below, from above before the lobed tip is a lobe each side, projecting laterally a little.

Length of fore wing 8.5 mm.

From Gang Ken, southwestern Fukien, 25 July, and Yim Na San, eastern Kwantung, 13 June, China (Gressitt). Type M.C.Z. no. 23429.

HYDROPSYCHE COMPLICATA spec. nov.

(Figs. 88, 94, 99, 100)

Head with pale yellowish hair, considerable black behind on vertex (less black in female); thorax with the same yellowish hair, some black on sides of pronotum; palpi dark brown; antennae very pale, with broad dark rings; abdomen black above, pale beneath; femora and tibiae largely dark (in female much paler), spurs pale. Fore wings

dark, with many small spots of yellowish hair all over, getting smaller and more numerous toward tip, where some are in transverse rows; outer fringe dark, with two pale interruptions; hind wings gray. Venation much as in others; fork one with a pedicel much shorter than discal cell, fork three with pedicel hardly one fifth of fork; in hind wing fork one is small. Male genitalia show a superior plate with a median angular incision, and each side a rather stout, clavate process, which, seen from side, is curved downward; claspers have the last joint moderately long, straight, and, from above, tapering, from side appear broader until near tip; the penis has an elaborate set of processes; the swollen tip shows (from above) a broad apical cavity containing each side a lobe tipped with three fine black bristles or spines, before this is a minute round button, at the narrowed neck is a large dark lobe each side, from above rounded, and before this is a dark process each side, broad in front, tapering to a spine behind and having above an elevated lobe, seen from the side the basal part of penis is upcurved and thick, the two dark lobes near tip very prominent, and before the first is a long, curved bristle.

Length of fore wing 8.5 mm.

From Yin Na San, eastern Kwantung, 10 to 16 June, China (Gressitt). Type M.C.Z. no. 23430

HYDROPSYCHE BRYANTI spec. nov.

(Figs. 35, 38)

Head dull yellowish, with rather short gray or yellowish gray hair; palpi and antennae yellowish, latter narrowly annulate with brown; thorax with the same yellowish-gray hair; legs and spurs yellowish; abdomen brown above, paler beneath, genitalia pale. Forewings clothed with appressed yellowish and gray hair, faintly marmorate with pale brown, dark spots along costal border and outer margin, a larger one at end of first apical vein, fringe partly dark; hindwings yellowish gray, fringe dark gray.

In forewings fork one is about three times as long as its pedicel, fork two back a trifle on discal cell, fork three nearly four times as long as its pedicel, fork four extending on median cell fully one-half width of cell.

In hindwings fork one is much shorter than its pedicel, fork two extends back on discal cell two-thirds the length of the cell, up to the cross-vein, fork three nearly twice as long as its pedicel.

The male genitalia are somewhat like *H. hamifera* Ulmer from Celebes. The superior piece is broad, with two slender apical downcurved processes, at first bowed, then parallel to each other, the tips minutely dentate or serrate (in *hamifera* pointed and crossed), from the side there is a tooth above each slender process. The claspers are moderately slender, the thickened part with several stout bristles, the apical piece slender, curved, and pointed; the tip of the penis seen from above (or below) is widely forked, toward base is a recurved tooth on each upper side.

Forewings 9.5 mm. long.

From Mt. Salak, Java (Bryant and Palmer). Type M.C.Z. no. 22065. In appearance it is similar to *H. javanica*, but the genitalia very different.

HYDATOPSYCHE DECEPTA spec. nov.

(Figs. 87, 90, 95)

General appearance of an *Hydropsyche* or *Diplectrona taprobanes*, marked much as the latter species, faintly marmorate with brown, with scattered pale spots. The venation much as in *H. melli*, the discal cell even longer than in that species, and the median fully as long; fork two goes back on the discal more than one half way, and fork three reaches to tip of the median cell. The male genitalia are quite different from *H. melli*, the superior plate has a median tapering process, and each side of it come the preanal appendages, the apical part very slender; the claspers are long, the apical joint short, the tip pointed; the penis has the tip slightly swollen, apparently with an apical cavity from which arises two small elongate processes, which, seen from the side, curve downward. The antennae of male are fully as sharply crenulate as in *H. melli*, and the legs and claws the same.

Length of fore wing 8 mm.

From Ta Hian, 13 to 17 June, and Fan Hoang, 20 June, both in Hainan Island and taken by Gressitt; much smaller and less spotted than *H. melli*, which was taken by Gressitt in southern China. Type M.C.Z. no. 23431.

HYDROPSYCHODES PULCHRIPENNIS spec. nov.

(Figs. 17, 20)

Head brown, with some pale yellowish hair, palpi and antennae pale, latter faintly annulate with brown; thorax brown, with some

yellowish hair; legs dull yellowish, spurs hardly darker; forewings brown, with about seven large spots, two in apical field sometimes connected, a subquadrate one over discal cell and above it, sometimes almost connected to a spot before it; the subbasal spot sometimes extended to base along hind margin; hindwings hyaline, the tip and fringe almost black.

In fore wings fork one is a little longer than its pedicel, fork two sessile on discal cell, fork three about three-fourths of two, extending back to tip of median cell, forks four and five subequal; in hindwings fork two is back on discal cell about width of cell, fork three scarcely longer than its pedicel.

Male genitalia shows a triangular superior median piece and each side of it a lateral appendage with an angle on the outer side near base; the claspers are very slender, moderately enlarged toward tip, the apical part enlarged almost globose and with a sharp curved tip; the penis has a slightly enlarged tip and from below appears bilobed.

Forewing 7 mm. long.

From Namoe Oengas Estate, Langkat, East Coast, Sumatra (Jourin).

Type M.C.Z. no. 22062.

Although in appearance it is much like *H. albocincta*, the genitalia are very different; I give a figure of *H. albocincta* (Fig. 19).

SMICRIDEA ULMERI spec. nov.

(Fig. 5)

Head dark, with snow-white hair, and also on the thoracic notum, palpi, legs, and abdomen yellowish, antennae pale, slightly annulate with dark; wings white, scarcely darkened in the stigmal area of the fore wing; venation much as in the other species, fork one not as far back as two and three, hardly as long as its pedicel, forks four and five very long.

Male genitalia show a short and broad superior plate, with a broad emargination at tip, the claspers have the apical part short, and somewhat tapering to the tip, the penis is only a little swollen at tip.

Fore wing 5 mm. long.

From Ravenshoe, Atherton tableland, 3000 ft., 27 April, Queensland, Australia, (Darlington). Type M.C.Z. no. 22092. This is evidently what Ulmer (Trichoptera, Mjoberg's Swed. Exp. 1910-1913, p. 15) refers to under *S. australis*, since it was from a nearby locality,

and as he said was very pale, and had the apical part of claspers shorter than in *S. australis*.

SMICRIDEA PARVA spec. nov.

(Fig. 41)

Head blackish, with white hair and also white hair on the thorax; palpi brownish; antennae pale, above annulate with dark; legs pale; abdomen brown, genitalia pale. Fore wings mostly white in male, usually a large brownish stigmal mark, and sometimes darkened irregularly along tip, and two large spots (sometimes connected) along hind margin; in female usually with these large dark spots or almost entirely dark; hind wings white.

The fore wings have the venation similar to others; however the fork one goes as far back as fork two, forks two and three about equal, fork four very long, reaching back a little further than five, discal cell slender, nearly six times as long as broad, cross-vein from cubitus to anal very oblique backwards, and before the cross-vein from cubitus to medius. Male genitalia have the claspers much like *S. edwardsi*, the apical part much shorter than basal part, very slender, a little curved, but not tapering to tip as in *S. edwardsi*; the basal piece (from side) has the tip scarcely upturned, the penis is enlarged at tip.

Length fore wing 4.5 mm.

From Pemberton, West Australia, 19 Nov. (Darlington). Type M.C.Z. no. 22091.

Much smaller than others except *S. australis*, from which it is readily known by the much shorter apical part of the claspers; many specimens.

SCIOPS SPINATA spec. nov.

(Fig. 31)

Body deep black, lateral warts of head and prothoracic warts pale, genitalia paler, and penis pale yellow. Head and thorax with black hairs above, palpi and antennae black; legs dull yellowish brown, tarsi darker, hair black; both pairs of wings densely clothed with black hair.

Head with a pair of large oblique posterior warts, and two very small ones each side in front; third joint of palpus longer than second. Fore wings with discal cell two and a half times as long as broad; fork one

with pedicel longer than width of discal cell, fork two back almost to cell, fork three but little longer than its pedicel, fork four reaches only a little before cross-vein, fork five as long as four. In hind wing fork one a little longer than its pedicel, fork two with a short pedicel, fork three no longer than its pedicel, fork five with pedicel nearly one half its length. Abdomen extremely broad, and the genitalia very small; from above an elongate triangular piece with rolled and black edges, within paler; below it a large median piece projects, its apex forked and with a broad ridge each side; the claspers small, basal joint moderately enlarged at tip, apical joint slender, pointed; penis thick, bent down, at tip with a pair of upright spines.

Fore wing 6 mm. long.

From National Park, McPherson's Range, Queensland, Australia, 13 March, 3-4000 ft. (Darlington). Type M.C.Z. no. 22088.

SCIOPS INERMIS spec. nov.

(Figs. 9, 11)

Body black, warts brown, head and thorax with some dark hair, antennae, palpi, and legs brown, spurs paler. Wings uniform blackish, with black hair; hyaline white spots in fore wing over forking of medius, and over cross-vein from discal cell to medius, less distinctly over end of discal cell.

Fore wings with discal cell over four times as long as broad, median cell about as long as discal, and scarcely wider, fork one with pedicel about one half length, fork two back to discal, fork three with pedicel fully one half its length, fork four about width of median cell back on cell, fork five about same length, but wider toward base; in hind wing fork one only little longer than pedicel, fork two back to discal cell, fork three but little more than one half of fork two, fork five back to about middle of discal cell.

Abdomen of male very broad and flattened; genitalia (except penis) small and inconspicuous; and the claspers close to abdomen. Above is a triangular piece, just below it each side a small, slender, pale piece, then a large piece whose tip (seen from side) has a blunt process above, from below this extends the large, blunt penis, which (seen from above) is seen to have a median part and a rounded, almost hyaline extension along each side, the outer edge of which is thickened. The claspers are slender, tip fairly enlarged, apical part curved, slender, and pointed at tip.

Fore wings 6.5 mm. long.

From Wentworth Falls, 3 Jan., and Blackheath, 18 Jan., both in the Blue Mts., New South Wales, Australia (Darlington). Type M.C.Z. no. 22089.

I have put these two species in *Sciops* largely because of the very broad abdomen and very small genitalia; the venation is similar to *Diplectrona*, but those species have a slender cylindrical abdomen in male. Neither of the species has the third joint of palpus as long as McLachlan states for his two species. I think that these proportions vary in both *Diplectrona* and *Smicridea*. *Smicridea* (Australian species) has the fork four plainly a little longer than five, and the vertex warts are not as large as in these *Sciops*.

DIPLECTRONA ANGUSTA spec. nov.

(Figs. 16, 49)

Head brown, posterior warts pale; palpi brown, antennae pale, beyond base annulate with brown; prothoracic warts pale, rest of notum brown, except pale mesoscutellum, pleura and beneath more yellowish; abdomen brown; legs yellowish, spurs also.

Fore wings brown, sparsely clothed with short black hair, the three cross-veins, forking of medius, and end of anal veins faintly white; hind wings gray with short black hair.

Fore wings more slender than usual; discal cell about five times as long as broad, fork one with a short pedicel, fork two back on discal less than width of cell, fork three scarcely longer than one, with a pedicel two thirds its length, fork four a little longer than two, back on median cell more than width of cell, fork five a little longer and plainly wider than four, cross-vein from radial sector to medius oblique, and that from cubitus to anal also oblique.

In hind wings discal cell still more slender, fork one with very short pedicel, fork two back a little on discal, fork three no longer than one, and with a pedicel about its length, fork five long and wide.

Male genitalia have a superior plate with a slender lateral process each side curving in toward its fellow, the claspers rather short and heavy, the apical part short and pointed, the penis is enlarged at tip.

Fore wing 10 mm. long, 4 mm. wide.

From The Dorrigo, New South Wales, Australia, 3000 ft., 27 Febr. (Darlington). Type M.C.Z. no. 22087.

AUSTROPSYCHE gen. nov.

Related to *Diplectrona* and *Sciops*; spurs 2-4-4; in fore wings fork four equal to five; in hind wings the subcosta and radius run close together to near middle of discal cell, where they are connected by a very short cross-vein, and then separate, the radius bending behind but not so much as in *Diplectrona* so as scarcely to approach the discal cell and the space not narrowed; discal cell very elongate; costal area rather broader than in allied genera, not narrowed near middle, and with an oblique costal cross-vein before middle. Maxillary palpi with last joint very long, equal to rest of palpus, third joint rather longer than fourth, but scarcely, if any, longer than second. On the head the posterior warts are greatly enlarged so as to crowd the intermediate wart close to the anterior wart.

AUSTROPSYCHE VICTORIANA spec. nov.

(Figs. 6, 7, 10)

Head dark, the warts pale, with rather scant mostly blackish hair; palpi brown; antennae pale, joints beyond base annulate with dark; pronotal lobes pale, rest of thorax above dark, except a rather pale area through the middle; abdomen brown above, paler below; legs yellowish, tarsi rather more brown, spurs pale, hind tibia of male moderately long-taired behind.

Fore wings gray, with darker stigmal area, and toward tip, clothed with sparse black hair, five hyaline white spots, one at end of anals, one over forking of medius, and one over each of the three principal cross-veins; hind wings pale gray, with gray and some black hairs, outer fringe dark.

In fore wings discal cell is over five times as long as broad, fork one with a pedicel one-half its length, fork two reaching back on discal cell hardly width of cell, fork three about two thirds of two, and with a pedicel one half its length, forks four and five subequal, but five reaching back a little further and wider toward base. In hind wings the discal cell also very long, fully equal to second apical cell, fork one with short pedicel, fork two reaching back on discal cell about width of discal cell, fork three with pedicel one half its length, three cross-veins well separated as in the fore wings.

Male genitalia have the claspers rather stout, with a tooth on the outer side toward tip of basal part, the apical part (from side) clavate,

but the sharp tip is incurved, there is a dark basal superior plate, subtriangular, and beneath it a broad pale piece with some bristly lobes on the side; the penis has a slender apical part projecting from a broader tube, from side this is bilobed.

Fore wing, male 11.5 mm., female, 14.5 mm.

From Mt. Donna Buang, Victoria, Australia, 6 to 7 Dec., and from Du Creek, Warburton Range, Victoria, 6 Dec. (Darlington). Type M.C.Z. no. 22086.

STENOPSYCHODES TILLYARDI spec. nov.

(Fig. 60)

Head yellow, clothed with golden hair; antennae brown, basal joint yellowish, palpi black; thorax black, pronotum with golden hair, and along middle of mesonotum, and a tuft of golden hair at base of fore wing; abdomen black, superior appendages pale, others black, on venter three segments near tip pale with a darker central triangle (similar to male *melanochrysa*); legs black, tarsi paler, spurs yellowish to brown. Wings black, with short black hair; fore wings with numerous golden spots between veins, and the anal area almost wholly golden, only a few slight dark interruptions.

Fore wings with discal cell nearly four times as long as broad, fork one back a little on discal cell, fork two back one half way on discal cell, fork three with a pedicel one half its length, forks four and five are nearly equal, pedicel of five about two thirds of pedicel of four.

In hind wing discal cell is rather more slender, fork one scarcely back on discal, fork two back one half way on discal cell, fork three with pedicel fully one half its length, fork five very large and long. The male genitalia are most like *S. mjobergi* Ulmer; the lateral appendages are more rounded at tip, the ventral appendages, from side to side, have the apical part more slender, and, from above, also more slender and longer, the inner hook very large and nearer base than in *mjobergi*.

Fore wing ♂ 12 mm. long, ♀ 15 mm. long.

From Millaa Millaa, Atherton tableland, 2500 ft., Queensland, Australia, April 1932 (Darlington). Type M.C.Z. no. 22084.

Readily separated by the yellow anal area of fore wing. Darlington took *S. montana* at Donna Buang Mt., Victoria, and W. Heron sent *S. melanochrysa* from The Dorrigo, New South Wales.

These insects are not especially near *Stenopsyche*, except in general plan of genitalia, and the length of forks four and five; the absence of

ocelli, the tiny warts on mesonotum, as well as the peculiar mouth parts warrants a separate tribe, the *Stenopsychodini*, equivalent to the *Stenopsychini* and *Polycentropini*; from the latter readily separate by the longer fork four and flat vertex.

PHILOPOTAMUS STENOCERCA Tillyard

(Fig. 50)

This species, which I first supposed to be new, I am surprised to find was described by Tillyard as a new genus, *Hydrobiosella*, a subdivision of *Hydrobiosis*. The maxillary palpi are like the common European forms, the last joint being longer than in most of the species; there are no erect hairs on veins, and the venation is like that of the European species, except that fork one reaches back a short distance on the discal cell in both wings (sometimes sessile in European forms). The genitalia are very much like the usual *Philopotamus*, utterly different from *Hydrobiosis*. The fore wings are a pale brown, with innumerable small yellowish spots, much more numerous than usual; behind the fork five there are about twenty such spots.

I obtained two specimens from Mr. Hudson many years ago mixed in with specimens of *Philanisus*.

PLECTROCNEMIA AUSTRALICA spec. nov.

(Figs. 65, 69)

Head brown, with dull golden and black hair; palpi yellowish brown, antennae dull yellowish, annulate with pale brownish; pronotum with mostly black hair, mesonotum with golden and black hair; abdomen dark brown; legs dull yellowish, hind tarsi faintly marked with darker.

Fore wings gray, with black hair, and with numerous very small patches of golden or yellowish hair, a few larger ones along the costal area, a curved white hyaline line from fork of medius to cubitus; hind wings gray, with black hair.

In fore wings discal cell about three times as long as wide, fork one hardly equal to its pedicel, fork two back a trifle on discal cell, fork three short and with very long pedicel, fork four hardly longer than three, fork five very long and greatly widened at base, more so than in other species.

In hind wings discal cell small, about twice as long as wide, fork one a little longer than pedicel, fork two back to discal cell, fork five long and very wide.

Male genitalia show a pair of lower claspers, subparallel and with tips somewhat enlarged, longer than usual and strongly upcurved, a superior median, tapering piece, and beneath it two pieces extending out to tips of claspers or beyond and with sharp points, and on each side a broad, elongate oval piece, tipped with long hairs. There appears to be a median translucent plate, vertical from between the claspers up in a curve.

Fore wings 7 mm. long.

From Mt. Kosciusko, New South Wales, Australia, 5000 ft., 8 Dec. (Darlington). Type M.C.Z. no. 22090.

RHYACOPHILIDAE

HYDROBIOSIS

When Ulmer described his *H. stigma* he mentions that it is not typical and compares it in certain points with the American *Atopsyche*; it is, however, quite different from that genus. Since Tillyard has divided the New Zealand *Hydrobiosis* into several genera it is to be expected that the Australian forms will also belong to new genera. *H. stigma* and the two species described below as *pallescens* and *nigrita* I unite in a new genus differing from *Hydrobiosis* in the much longer discal cell, and fork two reaching the discal cell.

NOTIOBIOSIS gen. nov.

In general similar to *Hydrobiosis*; the anastomosis being before the base of the stigmal region, the spurs 2-4-4; discal cell closed, and several times as long as broad, fork one reaching to discal cell, fork two going back on discal cell or at least reaching to it.

Type *N. pallescens*.

NOTIOBIOSIS PALLESCENS spec. nov.

(Fig. 40)

Head yellowish, clothed with white hair; palpi pale; antennae pale, faintly annulate with brown; thorax pale, white hair on prothoracic

warts and on middle of mesonotum; abdomen brownish, paler beneath; legs pale, tibiae slightly darker near middle and at tip, and tarsal articles often marked with dark.

Fore wings pale brownish, with many white and yellowish scales and some scattered black hairs, longer white erect hairs on the veins and some black hairs, most noticeable near forking of medius and behind, apical fringe white, veins brown in streaks, interrupted with paler; stigma brown. Hind wings pale, with gray hair and fringe. On fore wings several hyaline white lines near middle, a fine line just above the medius, a transverse bar crossing medius some distance before forking, the cross-vein from radial sector to medius, and a mark from cubitus to end of anal veins.

In fore wings fork one reaches discal cell, fork two back on discal cell for nearly width of cell, fork three about as long as its pedicel, fork four no longer than three, fork five much longer than four and more slender at tip, discal cell about four times as long as wide, cross-vein from medius to cubitus obliquely back. In hind wings fork one very narrow, reaching back to the cell, fork two obliquely broad on cell, fork three longer than its pedicel, fork five with a short pedicel.

The abdomen has on venter, from sixth segment, a spine about as in *N. stigma* Ulmer, and at tip of seventh a short erect one with a truncate tip, shorter than *N. stigma*.

Length of fore wing 10 mm.

From Pemberton, West Australia, 19 Nov. (Darlington). Type M.C.Z. no. 22093.

Readily separated from *N. stigma* by the size of forks of hind wings, as well as the longer fork two in fore wings, and coloration.

NOTIOBIOSIS NIGRITA spec. nov.

(Figs. 45, 46, 72)

Head black, clothed with black hair; palpi brown; antennae brown, faintly annulate with pale at the joinings; thorax black and with rather long black hairs; the prothoracic warts pale; abdomen black; legs pale, tarsi rather brownish.

Fore wings blackish, with black hair and fringe, stigma very dark and prominent, there are a few patches of golden hair at ends of anal veins, on cubitus before forking, and others near the anastomosis, these on the veins, and on the membrane at tip of stigmal area is a yellowish spot. Hyaline white lines as follows:—one up from end of

anals, one over cross-vein from radial sector to medius and this extending down to the base of fork four; veins uniform brownish. Hind wings gray, with black hair and fringes. In fore wing discal cell is over three times as long as broad, fork one sessile on cell, fork two back fully width of cell, fork three longer than its pedicel, fork four still longer, and about as long as fork five, cross-vein from medius to cubitus obliquely back. In hind wings fork one has a short pedicel, fork two obliquely back on cell, fork three with pedicel one half its length, fork five long and wide.

Male genitalia show a median blunt process, a very slender piece each side, and below a long, broad clasper, tapering toward the incurved tip, and below these a pair of short curved slender pieces, from above one sees a broad penis with truncate tip. The claspers, from behind, are seen to be fringed on the lower inner edge with a row of long, curved bristles. On the sixth ventral segment is a stout spine reaching across seventh segment, and from the tip of seventh is a still longer and slightly upcurved spine, which, from below, is seen to be rather broad throughout.

Fore wing 9.5 mm. long.

From Mt. Spurgeon, North Queensland, Australia, 3500 to 4000 ft., 26 July (Darlington). Type M.C.Z. no. 22094.

PSYLLOBETINA gen. nov.

A division of *Hydrobiosis*, with the anastomosis before the stigmal area, discal cell of fore wings open, fork one pedicellate, fork two back to the cross vein from radial sector to medius, forks three, four, and five subequal, in hind wings no fork one, fork two broad at base; female with long, slender, upcurved ovipositor.

The genus *Typhiobiosis* of New Zealand has the discal cell open, but is otherwise very different.

PSYLLOBETINA PLUTONIS spec. nov.

(Figs. 22, 52, 57)

Head black, with a few pale hairs; palpi brown, antennae brown on basal joints, yellowish beyond; thorax black, with yellowish brown hair; abdomen dull black; legs yellowish brown. Fore wings brown, with scattered black hair, stigma very distinct, black; hyaline white marks as follows: one from medius before forking obliquely up to

forking of radial sector, one over cross-vein from radial sector to medius and extended to the base of fork four, one up from end of anals to base of fork five, a small one from radial sector to radius at base of stigma, and a fine line along upper side of medius; veins brown. Hind wings gray, with black hair and fringe, veins brownish.

In fore wings fork one is long pedicellate, fork two more than twice as long as fork one, fork three shorter and with a pedicel two-thirds its length, fork four very long, almost as far back as fork five, cross-vein from medius to cubitus is strongly bowed outward, and in hind wing still more so. In hind wing no fork one, fork two broad at base, fork three with a short pedicel, fork five almost back to the bowed cross-vein.

Fore wing 7 mm. long.

From Blackheath, Blue Mts., New South Wales, Australia, 18 Jan. (Darlington). Type M.C.Z. no. 22095.

DOLIOCYPTA new subgenus of Rhyacophila

This is based on two very small species which in general structure and venation agree with Rhyacophila. They differ however in the remarkable enlargement of the anal cell in the hind wings. This is fully three or four times larger (in proportion) than the anal cell of Rhyacophila (and over one hundred species were examined). The male genitalia are very short, however, but little shorter than in some other Rhyacophilas; there is a triangular tooth on the venter.

Genotype *D. liliputana*.

RHYACOPHILA (DOLIOCYPTA) LILIPUTANA spec. nov.

(Figs. 97, 98, 104)

Head reddish brown, mostly dark hair, some on vertex pale, palpi short, long black hair on basal joints; antennae brownish, thorax yellow brown above, darker on sides of mesonotum, some bristles pale, over wing base darker; abdomen almost black above, tip and venter paler, quite long hair above; legs pale, mid tibia rather darker above. Fore wings grayish brown, with some small scattered white spots, most numerous in apical half, in some places almost in bands, most of the fine hair on membrane is golden; hind wings gray, darker near tip, and particularly in the stigmal area.

In fore wings forks one and two about equal, fork three with a

pedicel about equal to fork. In hind wing the anal cell is greatly enlarged. The male genitalia have a short superior plate deeply divided, from side the lower appendages have a large basal joint, convex below, and at tip is a shorter joint, divided into a short dorsal lobe, and a lower part about twice as long with parallel sides. Venter with a small triangular tooth.

Length fore wing 5 mm.

From Wong Sa Smi, South Kiangsi, China, 9 July (Gressitt).
Type M.C.Z. no. 23432.

RHYACOPHILA (DOLIOCYPTA) MINUTA spec. nov.

(Figs. 89, 102)

Small, and similar to *R. liliputana*; head and body darker, legs very pale, abdomen dark. Wings dark, the fore wing less spotted than *R. liliputana*. The fore wing has forks one and two about equal, fork three not as long as its pedicel; a snow white line back from end of discal cell. In hind wing the anal cell is enlarged, much as in *R. liliputana*. The male appendages are very short and compact, the lower outer plates have a small two-jointed appendage, and within is a pair of appendages with a broadly emarginate tip, the upper lobe short, the lower much longer and pale; from beneath the lateral plates show a long inner lobe, and the lower parts of the inner appendages curve toward each other.

Fore wing 4.5 mm. long.

From Dwa Bi, Hainan Island, 20 July (Gressitt). Type M.C.Z. no. 23433.

AGAPETUS MONTICOLUS spec. nov.

(Figs. 56, 59, 64)

Head black, some long, upcurved, white hairs on lower face, and a few above; palpi and antennae dark; thorax black, white hairs from prothoracic warts, dark hairs from near base of fore wing; abdomen dark brown. Wings black, with black hair and fringes, veins brown.

In fore wings discal cell is more than twice as long as broad, forks one and two both broad on discal cell, latter obliquely so, fork three much longer than its pedicel, fork four short, not one-half its pedicel, fork five long, back to the cross-vein.

In hind wings fork two more than one-half its pedicel, fork three nearly equal its pedicel, fork five back to forking of medius.

Male genitalia show a superior median tapering piece, and each side a short very slender, bristly piece, the intermediate pieces project beyond all others and have the sharp point abruptly upturned, the claspers are broad, from side nearly pointed at tip. From the sixth ventral segment is a stout curved process, neither pointed nor broadened at tip.

Fore wing 3.5 mm. long.

From Mt. Kosciusko, New South Wales, Australia, 4 to 6000 ft., 10-12 Dec. (Darlington). Type M.C.Z. no. 22096.

EXPLANATION OF PLATES

PLATE 1

PLATE 1

- Fig. 1. *Hemicaecilius medialis*, fore wing.
- Fig. 2. *Spiloconis cerata*, hind wing.
- Fig. 3. *Spiloconis cerata*, fore wing.
- Fig. 4. *Notanatolica parva*, genitalia, side.
- Fig. 5. *Smieridea ulmeri*, genitalia above, and penis from side.
- Fig. 6. *Austropsyche victoriana*, head above, and penis above.
- Fig. 7. *Austropsyche victoriana*, penis side, and clasper from side.
- Fig. 8. *Symphitoneura exigua*, genitalia from above and below.
- Fig. 9. *Sciops inermis*, genitalia from side, and tip of penis.
- Fig. 10. *Austropsyche victoriana*, superior plate from side, and clasper from above.
- Fig. 11. *Sciops inermis*, clasper from above.
- Fig. 12. *Zelandopsocus sinuosus*, fore wing.

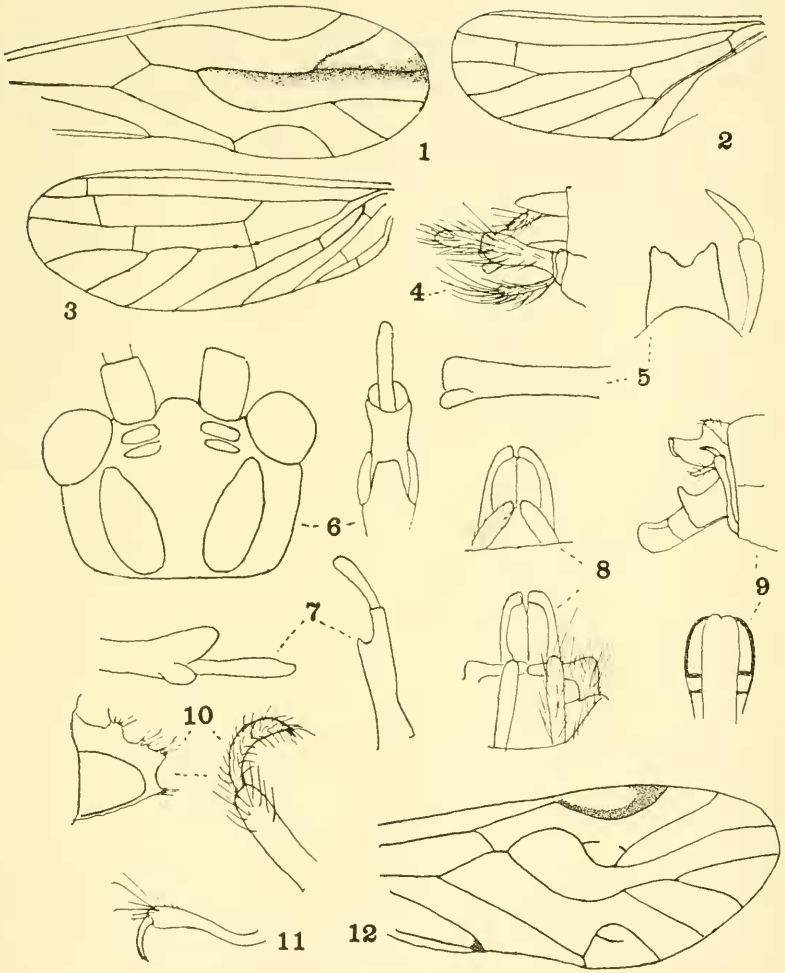


PLATE 2

PLATE 2

- Fig. 13. *Theristria medialis*, front femur, stigmal area of fore wing, and last ventral segment of male.
- Fig. 14. *Theristria minor*, front femur, stigmal area of fore wing, and last ventral segment of male.
- Fig. 15. *Theristria stigmalis*, front femur, stigmal area of fore wing, and last ventral segment of male.
- Fig. 16. *Diplectrona angusta*, clasper, and penis from above and side.
- Fig. 17. *Hydropsychodes pulchripennis*, superior plate, and genitalia from side, and enlarged tip of clasper.
- Fig. 18. *Theristria basalis*, front femur, stigmal area of fore wing, and last ventral segment of male.
- Fig. 19. *Hydropsychodes albocincta*, genitalia above.
- Fig. 20. *Hydropsychodes pulchripennis*, fore wing.
- Fig. 21. *Caecilius flavicosta*, fore wing.
- Fig. 22. *Psyllobetina plutonis*, ovipositor.

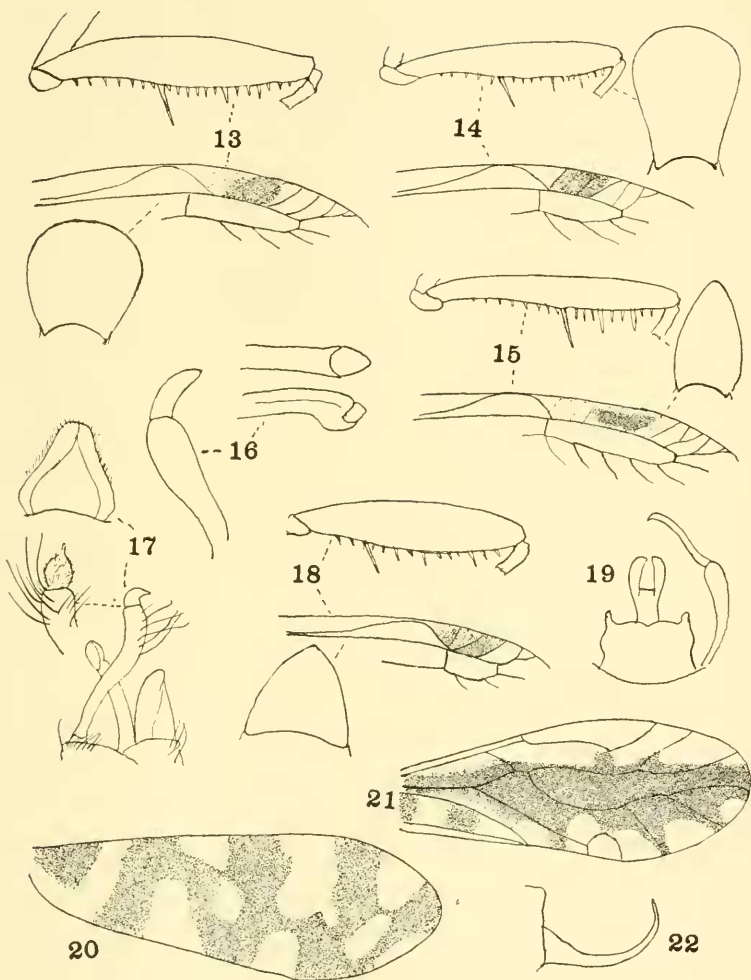


PLATE 3

PLATE 3

- Fig. 23. Claspers, above *Macronema pseudoneura*, below *Macronema ethelda*.
- Fig. 24. *Dyaperla anomala*, male genitalia.
- Fig. 25. *Phanoperla nervosa*, genitalia.
- Fig. 26. *Dyaperla anomala*, face.
- Fig. 27. *Macronema ethelda*, superior plate.
- Fig. 28. *Phanoperla hageni*, male appendages.
- Fig. 29. *Neoperla parva*, genitalia.
- Fig. 30. *Neoperla moesta*, genitalia.
- Fig. 31. *Sciops spinata*, penis from side, genitalia from above, and from side.
- Fig. 32. *Neoperla centralis*, genitalia.
- Fig. 33. *Alloecella grisea*, genitalia from above, and from side.
- Fig. 34. *Alloecella grisea*, wings, and part of antenna.

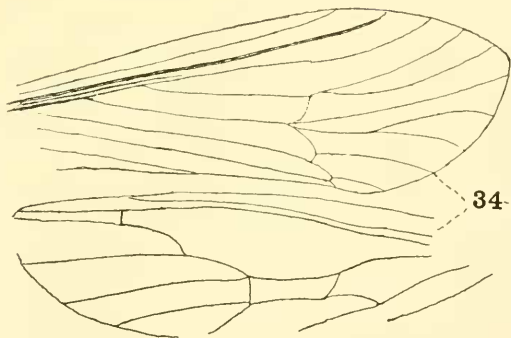
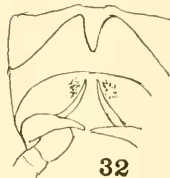
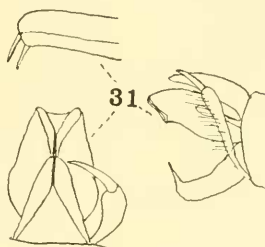
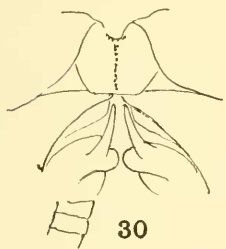
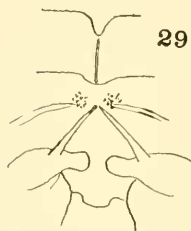
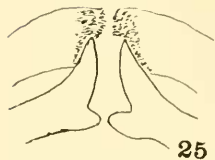
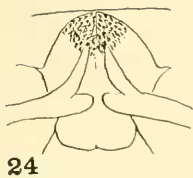
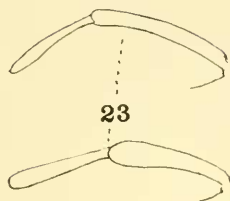
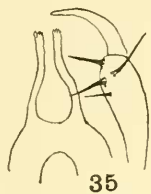


PLATE 4

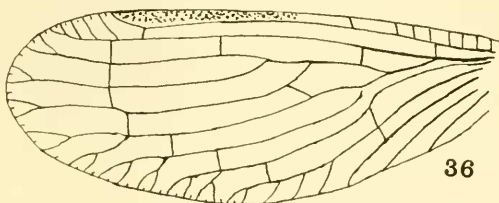
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PLATE 4

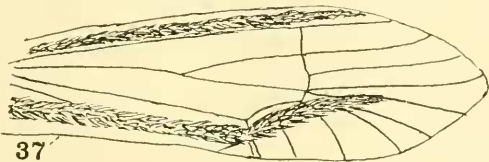
- Fig. 35. *Hydropsyche bryanti*, superior plate and clasper above.
- Fig. 36. *Sisyrina nirvana*, fore wing.
- Fig. 37. *Lingora plicata*, fore wing of male, and enlarged view of fork.
- Fig. 38. *Hydropsyche bryanti*, penis.
- Fig. 39. *Triplectides elongata*, genitalia, side.
- Fig. 40. *Notiobiosis pallescens*, wings.
- Fig. 41. *Smicridea parva*, superior plate and clasper, and penis.
- Fig. 42. *Hydropsyche bryanti*, genitalia, side.
- Fig. 43. *Barynema costatum*, fore wing.



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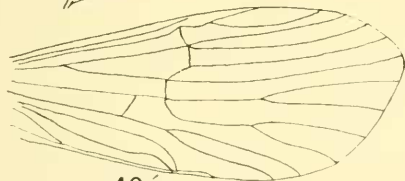
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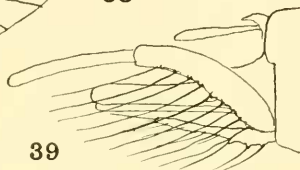
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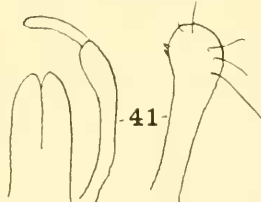
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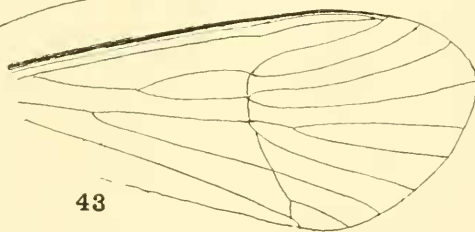
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PLATE 5

PLATE 5

- Fig. 44. *Lingora plicata*, wings of female, and genitalia of male from side.
Fig. 45. *Notiobiosis nigrita*, hind wing.
Fig. 46. *Notiobiosis nigrita*, genitalia from side, and fore wing.
Fig. 47. *Triplectides australica*, genitalia, side.
Fig. 48. *Leptocerus darlingtoni*, wings.
Fig. 49. *Diplectrona angusta*, genitalia, above.
Fig. 50. *Philopotamus stenocercus*, genitalia, side.
Fig. 51. *Barynema costatum*, hind wing.

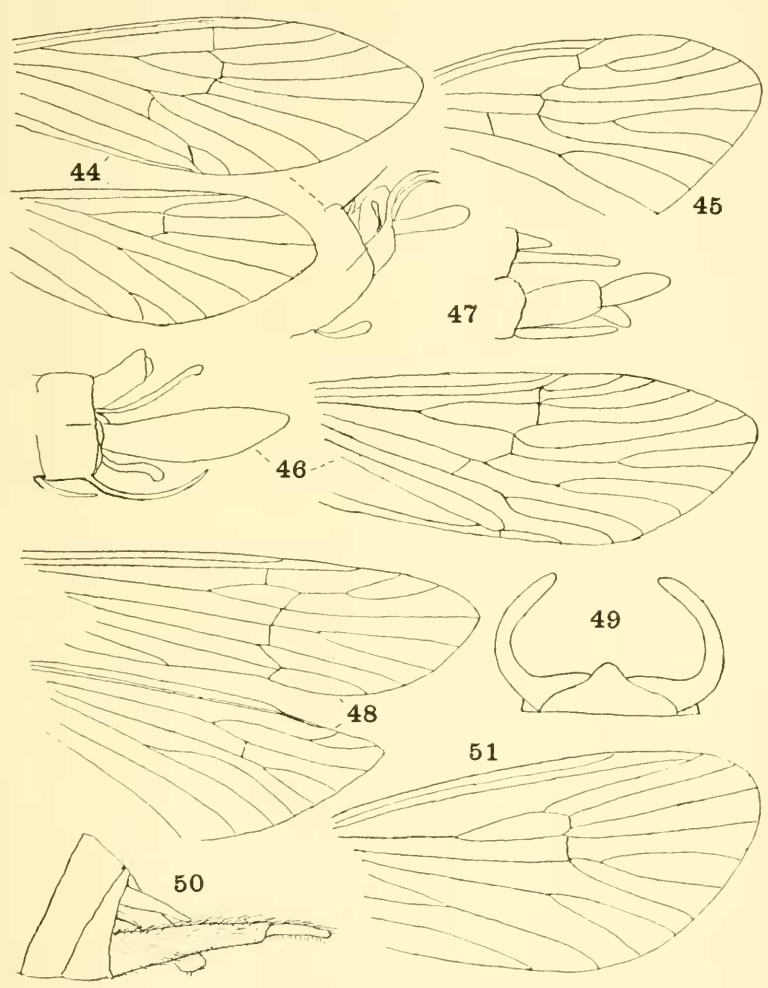


PLATE 6

PLATE 6

- Fig. 52. *Psyllobetina plutonis*, fore wing.
Fig. 53. *Symphitoneura wheeleri*, genitalia below, from side, and fore wing of male.
Fig. 54. *Barynema costatum*, genitalia, side.
Fig. 55. *Zachobiella pallida*, part of fore wing.
Fig. 56. *Agapetus monticolus*, fore wing.
Fig. 57. *Psyllobetina plutonis*, hind wing.
Fig. 58. *Macronema tristis*, genitalia from above, and from side.
Fig. 59. *Agapetus monticolus*, genitalia from side.
Fig. 60. *Stenopsychodes tillyardi*, genitalia from above, and from side.
Fig. 61. *Macronema tristis*, genitalia from below.

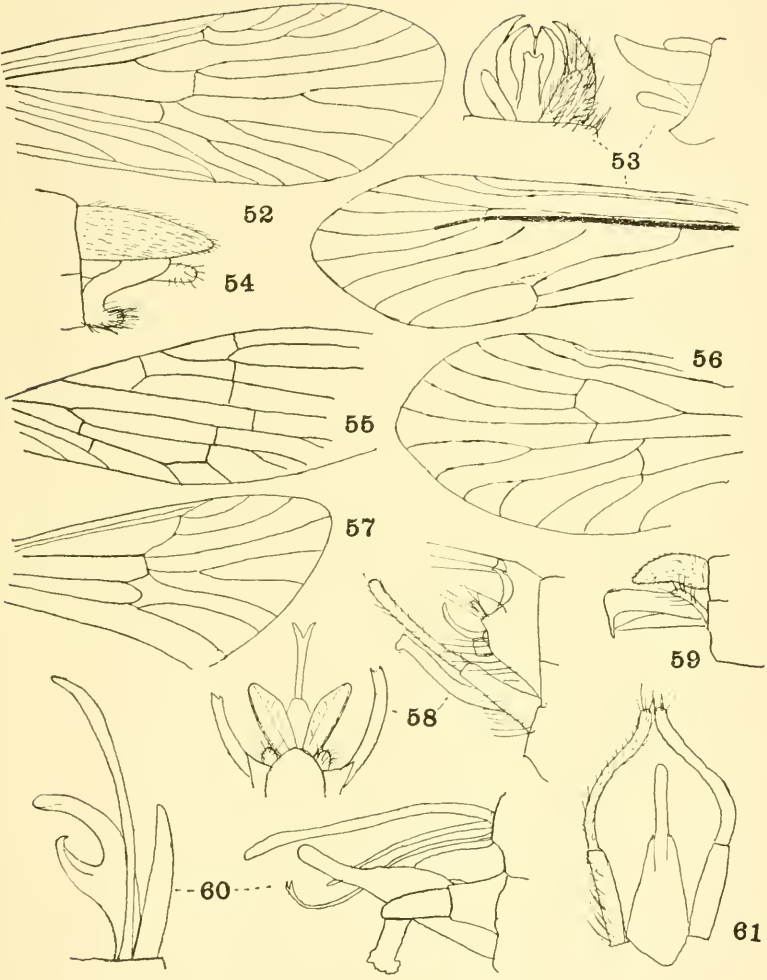


PLATE 7

PLATE 7

- Fig. 62. *Notanatolica parva*, genitalia from above.
- Fig. 63. *Leptocerus darlingtoni*, genitalia from above, and from side.
- Fig. 64. *Agapetus monticolus*, genitalia from above.
- Fig. 65. *Plectrocnemia australica*, genitalia from side.
- Fig. 66. *Tripletides australica*, genitalia, above and below.
- Fig. 67. *Molanniella atra*, fore wing.
- Fig. 68. *Molanniella atra*, hind wing.
- Fig. 69. *Plectrocnemia australica*, fore wing.
- Fig. 70. *Symphitoneura wheeleri*, wings of female.
- Fig. 71. *Symphitoneura wheeleri*, genitalia, above.
- Fig. 72. *Notiobiosis nigrita*, genitalia from above.

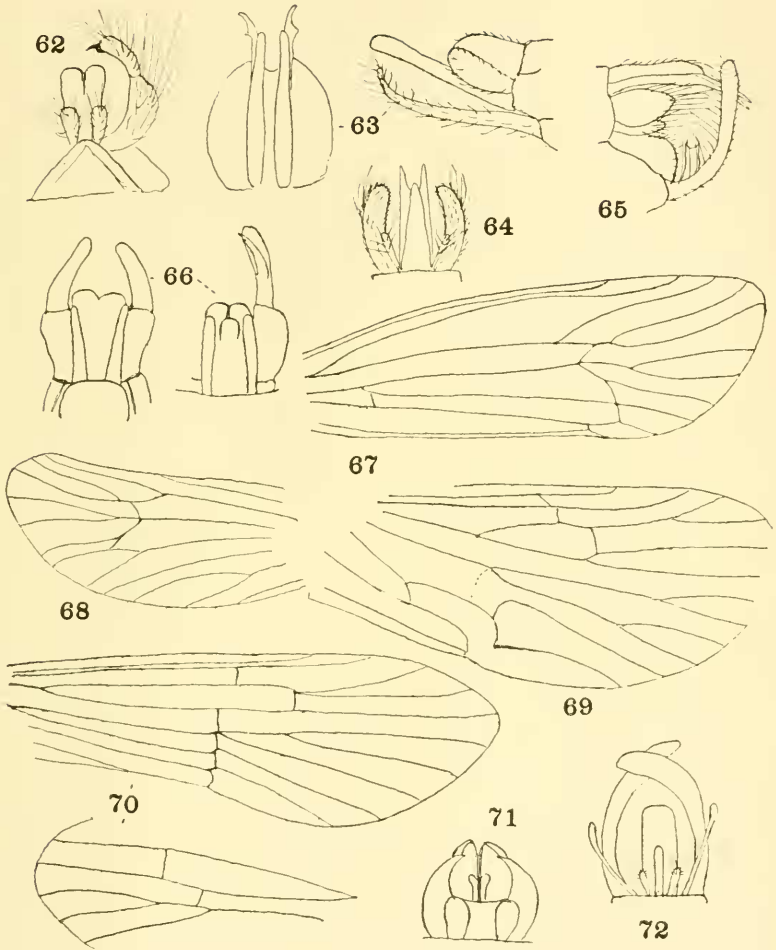


PLATE 8

PLATE 8

- Fig. 73. *Ochthopetina nigrifrons*, genitalia, above.
- Fig. 74. *Kiotina resplendens*, ventral plate of female.
- Fig. 75. *Togoperla sinensis*, ventral plate of female.
- Fig. 76. *Togoperla klapaleki*, ventral plate of female.
- Fig. 77. *Kiotina resplendens*, male genitalia, above.
- Fig. 78. *Neoperlops gressitti*, genitalia, above.
- Fig. 79. *Paragnetina insignis*, genitalia, above.
- Fig. 80. *Atoperla chiangi*, genitalia, above.
- Fig. 81. *Togoperla sinensis*, genitalia, above.
- Fig. 82. *Neoperlops gressitti*, head, above.
- Fig. 83. *Neoperlops obscuripennis*, ventral plate of female.
- Fig. 84. *Neoperlops gressitti*, ventral plate of female.
- Fig. 85. *Atoperla chiangi*, ventral knob.
- Fig. 86. *Hydatopsyche decepta*, penis from side and above.
- Fig. 87. *Hydatopsyche decepta*, preanal appendage.
- Fig. 88. *Hydropsyche complicata*, clasper.

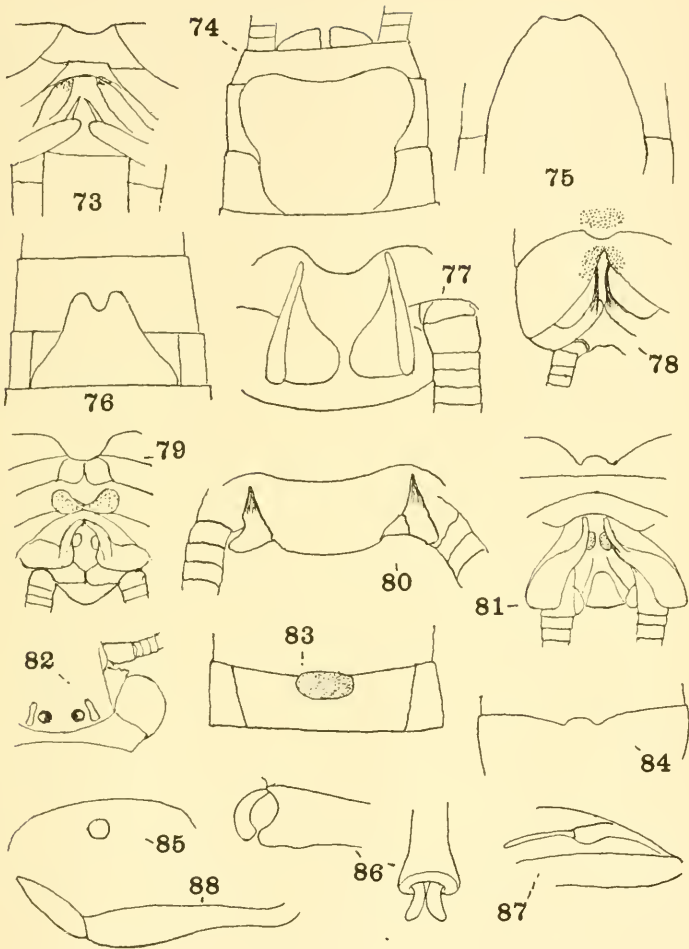


PLATE 9

PLATE 9

- Fig. 89. *Rhyacophila minuta*, genitalia from below.
- Fig. 90. *Hydatopsyche decepta*, superior plate.
- Fig. 91. *Zachobiella hainanensis*, part of fore wing.
- Fig. 92. *Berthella pretiosa*, fore wing.
- Fig. 93. *Hydropsyche dolosa*, penis, side.
- Fig. 94. *Hydropsyche complicata*, penis, side.
- Fig. 95. *Hydatopsyche decepta*, clasper.
- Fig. 96. *Spiloconis peticornis*, fore wing.
- Fig. 97. *Rhyacophila liliputana*, genitalia side.
- Fig. 98. *Rhyacophila liliputana*, superior plate.
- Fig. 99. *Hydropsyche complicata*, superior plate, above and side.
- Fig. 100. *Hydropsyche complicata*, penis, above.
- Fig. 101. *Hydropsyche dolosa*, penis, above.
- Fig. 102. *Rhyacophila minuta*, genitalia, side, and ventral process.
- Fig. 103. *Oodeia klapaleki*, ventral plate of female.
- Fig. 104. *Rhyacophila liliputana*, anal area of hind wing.
- Fig. 105. *Hydropsyche dolosa*, penis from below.
- Fig. 106. *Hydropsyche dolosa*, superior plate, and clasper.

